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The Impact of Word Processing and Electronic Mail on United States Courts of Appeals

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THE IMPACT OF WORD PROCESSING AND ELECTRONIC MAIL ON UNITED STATES COURTS OF APPEALS

By

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Federal Judicial Center
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TABLE OF CONTENTS

LIST OF TABLES v

FORWARD vii

EXECUTIVE SUMMARY. 1

I. INTRODUCTION 5

II. RESEARCH OBJECTIVES AND METHODOLOGY 9

- Objectives 9
- Description of Equipment 10
- Research Instruments 12
  - Typing Survey. 12
  - Opinion Circulation Survey 13
  - Electronic Mail Transmission Report. 14
  - Interviews and Questionnaire 14
  - Appellate Case Tracking Survey 15

III. TYPING WORKLOAD AND THE NEED FOR WORD PROCESSING . 17

- Secretarial Support 17
- Types of Documents 17
- Typing Time 19
- Typing Volume 21
- Opinion Preparation Process. 24
- Revision Typing. 26
- Typing Priorities. 29
- Improvements in Typing Productivity 32
- Time Savings 32

IV. MAIL SERVICE AND THE NEED FOR ELECTRONIC MAIL. . . 34

- Description of Electronic Mail 34
- Transmission Reliability 37
- Comparison of Electronic Mail to U.S. Postal Service. 38
- Costs of Electronic Mail 47

V. APPELLATE CASE PROCESSING 51

Stages Analyzed in Appellate Case Processing. . . 51
Description of Opinions 52
Pre-project Case Processing Time 54
Impact of Technology on Case Processing Time. . . 57

VI. IMPLEMENTING A PERMANENT WORD PROCESSING AND ELECTRONIC MAIL SYSTEM 66

Word Processing and Electronic Mail Use in the Third Circuit 66
Third Circuit Attitudes and Perceptions 66
Use by Clerk of Court 68
Use by Law Clerks 69
Use for Judgment Orders 71
Recommended Word Processing Equipment for the Third Circuit 71
Utilization of Word Processing 73
Training on Word Processing Equipment 73
Electronic Mail for the Third Circuit 76
Word Processing and Electronic Mail Use in Other United States Courts of Appeals 78
Word Processing Equipment for Other Courts . . 79

APPENDIX A: Typing Survey Booklet. 81
APPENDIX B: Excerpts from Internal Operating Procedures (IOP) Court of Appeals for the Third Circuit. 88

LIST OF TABLES

1 Distribution of Secretarial Support Within the Third Circuit 18

Third Circuit Typing Survey

2 Secretarial Time Spent Typing 20
3 Average Number of Lines Typed per Eight-Hour Day Per Secretary 22
4 Typing Volume Information 23
5 Volume Information by Document Category 25
6 Revision Typing by Document Category 27
7 Revision Typing by Author 28
8 Rush Typing by Document 30
9 Rush Typing by Author 31

10 Third Circuit Electronic Mail Survey: Transmissions Sent and Received 36
11 Third Circuit Electronic Mail Survey: Frequency of Transmission Disruptions 39
12 Third Circuit Opinion Circulation and Electronic Mail Surveys: Number of Opinions Exchanged by Page Size 41
13 Third Circuit Opinion Circulation and Electronic Mail Surveys: Comparative Delivery Times for Postal Service and Electronic Mail (EM) 42
14 Third Circuit Opinion Circulation Survey: Opinions Sent and Received 43

15 Third Circuit Opinion Circulation and Electronic Mail Surveys: Average Delivery Time by U.S. Postal Service and Electronic Mail . . . 44
16 Schematic Representation of Average Delivery Time Between Postal Service and Electronic Mail Among Third Circuit Locations. . 46
17 Third Circuit Electronic Mail Survey: Estimated Costs for the Third Circuit 50
18 Word Processing and Electronic Mail Project: Distribution of Written Opinions 53

Case Processing Time:
19 For Pre-Project Cases 55
20 For Pre-Project Versus Word Processing-Electronic Mail Cases 58
21 For Project Cases 61
22 Pre-Project and Project Cases by Judge (All Opinions) 63
23 Pre-Project and Project Cases by Judge (Only Signed Opinions) 64
24 Judge and Secretary Attitudes Toward Word Processing and Electronic Mail 67
25 Third Circuit Typing Survey: A Comparison of Judge Originated and Law Clerk Originated Typing . . . 70
26 Third Circuit Typing Survey: Comparison of Typing Volume on the Word Processor and Other Typing Equipment 74

FOREWORD

Technology has always held a special fascination for those interested in court improvement. At its best, it offers overburdened courts an alternative between increasing the judiciary's size or reducing access to the courts. Appellate courts, in a decade of explosive increases in their caseloads, have been especially anxious to take advantage of technological innovations. Because technology seems to promise so much, and seems so mysterious, there is, however, the temptation to adopt technological innovations without first carefully evaluating their contributions, their costs, and possible secondary effect on the operating procedures and relationships of a court and its staff.

At the request of the Third Circuit Court of Appeals, the Judicial Center undertook an evaluation of a test, in that court, of word processing machines and a related electronic document transmission capability. What would happen, the court was interested in learning, if each judge's chambers had available an electronic word processing system for the preparation of opinions, and furthermore, if the machinery in each judge's chambers could be coupled with a telecommunications system to allow draft opinions to be electronically transmitted between chambers in different cities?

How would this affect the productivity of each judge, and of the judges as they work in panels of three? What would be the comparative costs with other office equipment and with postal and other forms of transmission? How would the use of these innovations affect other aspects of the work of the judge and those who serve as his support staff? This report describes the evaluation

that the Center undertook and presents the results. The test achieved substantial time savings, and they are attributable almost entirely to reduction in the time-consuming process of opinion drafting. And, no less important than these time savings is the conclusion that they were achieved without disrupting established and productive organizational relationships within the Circuit. The effect of the word processing equipment is striking. The authors are able to attribute to it an overall reduction of 6% (or three weeks) in the total time from filing to disposing of an appeal that required a written opinion. There were reductions of 52% and 25% respectively in the time required by the court specifically to prepare and to issue per curiam and signed opinions. Substantial decrease in secretarial typing time devoted to opinions was documented. The electronic mailing capability reduced delivery time by 75%, albeit at obviously higher costs than the postal service. However, the efficacy of this technology is mitigated by occasionally uneven reliability of the transmissions, a problem to which further attention is being addressed.

We at the Center hope that two purposes will be served by this report. On the one hand, it presents a description of an evaluation effort that analyzed the impact of a technological innovation carefully and on several types of measures. It should be noted, in this context, that the quality of this particular evaluation was enhanced by prior Center research concerning the internal operating procedures of the Third Circuit. Moreover, the Courtran computers and staff were in place and able to develop the electronic mail application without the need for major start-up costs. Second, the report reveals to hard-pressed appellate courts the potential benefit of word processing technology.

The Center is bound to acknowledge its debt to several groups who made possible this evaluation. One is the Third Circuit Court of Appeals--the judges, their professional and secretarial staffs,

and the staff of the court itself. Moreover, the Congress was willing to appropriate the monies for the rental of the word processing equipment, with the understanding that the Center would not take advantage of a favorable re-t-purchase arrangement unless the word processing evaluation proved successful.

Without the cooperation of the Court or of the Congress, we would have been unable to provide this report of the costs and benefits of this new technological innovation in appellate case processing.

A. Leo Levin
Director

EXECUTIVE SUMMARY

A key objective of appellate courts is to process appeals as expeditiously as possible while discharging their appellate responsibilities properly. Although various appellate courts are introducing procedural reforms to improve the appellate process, few attempts have been made to expedite the preparation and dissemination of written appellate opinions.

Word processing and electronic mail are two technologies frequently identified as part of the "office of the future." These technologies are expected to provide greater productivity and faster service and to reduce the costs of preparing and disseminating the printed word. What potential do these technologies have for appellate courts?

At the request of the U.S. Court of Appeals for the Third Circuit, the Federal Judicial Center undertook a study to assess the impact of word processing and electronic mail on the appellate process. The major research questions were

Does federal appellate workload justify the use of word processing or electronic mail equipment?

How would the introduction of these technologies improve efficiency in expediting the processing of appeals?

How would the implementation of these technologies improve efficiency in the drafting and production of opinions?

What impact might these technologies have on secretarial performance and productivity and on judges' and law clerks' performance and work styles?

What impact would these technologies have on reducing the time to distribute and review draft opinions among court members?

Ten judges and several administrators located in six cities in the Third Circuit were each provided a modern cathode ray tube (CRT--a television-like display screen) word processing system containing a telecommunications capability. The Federal Judicial Center developed a special computer software program to give each Third Circuit user access to a central "electronic mail post office" system on the Courtran II computer.

Several research instruments, including typing surveys, opinion circulation surveys, and appellate-case tracking surveys, were completed during a 1977-1978 demonstration project to evaluate the impact of these technologies upon the Court of Appeals for the Third Circuit.

The general findings from the Third Circuit study are:

1. The average typing load for an appellate judge's secretary is substantially heavier than the typical typing load in corporate law firms or business offices.

2. The flow of typing is uneven, often unpredictable, and difficult to control; it requires substantial amounts of revision and rush typing.

3. The typing workload in the Third Circuit is heavy and the court would benefit from using up-to-date word processing equipment.

4. Word processing technology is cost-benefical for the Courts of Appeals. The equipment decreases the cost of preparing court opinions; allows better utilization of support personnel (secretaries and law clerks) in each judge's chamber; increases judges' productivity; and speeds the production and dissemination of draft and final opinions.

5. Word processing equipment increases secretarial productivity by 200 to 300 percent and decreases the number of typing hours by half.

6. Word processing consistently decreases the time required to prepare written opinions. This report documents a 52 percent reduction in the time required by the court to prepare and issue per curiam opinions and a 25 percent reduction in the time to prepare signed opinions.

7. Word processing reduced the overall appellate processing time (the time from filing the appeal to disposition of the appeal) by 6 percent.

8. Word processing equipment does not require a judge to alter work style or procedures.

9. Judges and secretaries express near-unanimous support for word processing equipment.

10. Each judge's chamber in the Third Circuit and selected administrative offices should be provided with at least a one-terminal (single CRT) word processing system.

11. Electronic mail reduces by 75 percent the time for the court to exchange draft opinions and other memoranda (U.S. postal service averages two days compared to .3 day for electronic mail). Electronic mail delivers 70 percent of documents the day they are sent and almost insures receipt within one working day, compared to U.S. postal service delivery of 1 percent the same day and 50 percent within one working day.

12. Electronic mail is substantially more expensive than regular U.S. postal service, but substantially cheaper than either facsimile transmission or private express delivery services.

13. Electronic mail does not decrease the time a court takes to review an opinion. The Third Circuit's current internal operating procedures might limit the potential impact of electronic mail on opinion processing.

The selection and implementation of any technology and associated administrative procedures can be complicated and burdensome. The study suggests

that opinions and judgment orders are ideally suited to word processing technology

that both law clerks and the clerk of court should make greater use of word processing equipment, in particular, law clerks should be trained to use the word processor

that secretaries in the Third Circuit be given additional word processing training in the use of advanced editing features; and that any court adopting word processing technology establish a two-phase training program, emphasizing basic features during initial training and advanced features during a separate training program

that judges should carefully study and compare one another's office procedures and work styles: some judges prepare draft signed opinions twice as fast as other judges (the fastest judge in the Circuit averages 50 days; the slowest judge 100 days)

that additional word processing applications not originally implemented during this study should be started, such as printing of slip opinions, and preparation of reports and urgent motions in the clerk's office.

We conclude that the study strongly supports permanent installation of word processing equipment, but provides inconclusive evidence for the permanent installation of electronic mail.

I. INTRODUCTION

The press, popular magazines, and technical journals frequently inform us about the anticipated "paperless society," "electronic age of information exchange and storage," "demise of the U.S. postal system," "birth of electronic mail service," and "installation of a computer terminal or word processor in every office and home." Although many of these above predictions may come true, they do not offer insight into the potential impact of electronic technology on the appellate court process.

Many reformers believe that appeals court should take much less time to perfect and deliberate the appeal. The National Advisory Commission on Criminal Justice Standards and Goals proposed that the Dispositional Time in Review [Appellate] Courts for criminal cases presenting substantial issues should be within ninety days after imposition of sentence by the trial court.[1] President Carter has suggested that legislation should be drafted for a speedy appeals act.

Some appellate courts are actively involved in a variety of procedural or administrative reforms.[2] Recent appellate reforms

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1. Law Enforcement Assistance Administration, Courts 126-27, Standard 6.4 (1973).

2. See, for example, Appellate Justice Improvement Project under the auspices of the National Center for State Courts.

include settlement conferences,[3] accelerated docket procedures,[4] centralized research staff attorneys,[5] and oral decision dockets (similar to the English courts where appellate judges issue decisions from the bench).[6]

Although these and similar measures will help divert, consolidate, eliminate, or expedite appeals, there will still be a substantial number of appeals requiring appellate courts to deliberate, and to prepare, review, and publish written opinions.

In the recent past, the potential benefits of word processing and electronic mail to help expedite the opinion preparation process were often overlooked or underestimated. For example, the 1975 National Conference on Appellate Justice prepared more than a thousand pages of briefing materials and conference conclusions but there is no suggestion or comment on using technologies for the preparation and dissemination of opinions.

Various appellate courts are beginning to examine and introduce modern management tools. Both federal and state appellate courts are developing computer-based information systems to monitor the appellate case flow better, provide more accurate statistical information, and offer improved court

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3. See J. Goldman, An Evaluation of the Civil Appeals Management Plan: An Experiment in Judicial Administration (Federal Judicial Center 1977) and Goldman, The Appellate Settlement Conference: An Effective Procedural Reform? 2 State Court Journal 3 (1978).

4. See, for example Jacobsen & Schroeder, Arizona Experiment with Appellate Reform 63 A.B.A.J. 1227 (1977).

5. See D. Meador, Appellate Courts: Staff and Process in the Crisis of Volume (1974) and P. Carrington, D. Meador and M. Rosenberg, Justice on Appeal (1977).

6. The Oregon Court of Appeals and the California First District Court of Appeals (San Francisco).

services.[7] Several detailed studies on the development and utilization of computer-aided legal research in the appellate courts have been published recently.[8]

Among businesses and government agencies, word processing is widely acknowledged as a technology whose time has come, and electronic mail, as a technology whose time is coming. A few appellate courts have already begun using word processing equipment. To date, no comprehensive study has reported on the effects of either technological innovation on the appellate process. Only one published report has assessed the actual implementation of these technologies in an appellate court.[9] This pilot project, completed six years ago by the U.S. Emergency Court of Appeals, in conjunction with the Federal Judicial Center, provided inconclusive findings. It assessed equipment that is now considered obsolete, and both technologies were used only sporadically.

Various manufacturers and businesses have claimed substantial productivity gains from such technologies. Self-serving interests of this kind, however, are likely to ignore or misrepresent the implications of such technologies for the courts. It is important to carefully consider these implications for appellate courts, particularly when the costs and benefits have not been previously assessed.

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7. As part of the Courtran II program, the federal courts are developing an Appellate Information Management Systems (AIMS) with the Federal Judicial Center; various state appellate courts, such as those in Alaska, the District of Columbia, Idaho, Missouri, North Dakota, and Oregon, are also preparing computer information systems.

8. For example, A. Sager, An Evaluation of Computer-Assisted Legal Research Systems for Federal Court Applications (Federal Judicial Center 1977); Search Group Inc., Automated Legal Research: A Study of Criminal Justice Agencies (1978); R. Caldwell, Issues in Automated Legal Research, National Center for State Courts Research Essay Series No. 3, 1977).

9. S. Flanders, Pilot Project on Communicating Automatic Equipment (Federal Judicial Center 1973).

The Court of Appeals for the Third Circuit asked the Federal Judicial Center to help implement and evaluate modern office equipment, specifically word processing and electronic mail. The Third Circuit wanted to determine whether these technologies might increase judicial productivity and expedite the preparation and dissemination of appellate court opinions.

Word processing and electronic mail equipment were installed in the chambers of each circuit judge and several administrative offices, (clerk of court, circuit executive, secretarial pool) and a special software computer program was written for the Federal Judicial Center's Courtran II computers to help provide an electronic mail service. To aid in a comprehensive study of the impact of these technologies, the court permitted the Center to collect sensitive and confidential information about case processing techniques such as office practices, work styles, and opinion drafting techniques.

This study focuses on the technology and equipment that may become commonplace in American business in the late 1970s and early 1980s, particularly as applied to the Third Circuit.

II. RESEARCH OBJECTIVES AND METHODOLOGY

Objectives

One of the primary objectives of the Third Circuit--and all other appellate courts--is "to insure that appeals are processed as expeditiously as possible consistent with a careful discharge of proper appellate responsibilities."[10]

The general purpose of this evaluation was to assess the impact of word processing and electronic mail technology on appellate court efficiency. We considered two types of efficiency:

> court efficiency in expediting the production and productivity in each judge's office (the amount and speed at which court documents, particularly written opinions, could be prepared, edited, retyped, and disseminated). Research techniques such as typing and communications surveys helped measure such criteria.
>
> court efficiency in expediting the average time to process a case (the number of days gained or lost by introducing and implementing technological innovations). A case-tracking survey that measured time intervals between crucial appellate stages helped measure this criterion.

From a judge's perspective, the first criteria might be more important, but an administrator might place greater weight on the second. From the public's perspective, improvements in both types of efficiency are very desirable.

This study examined the impact these technologies might have on the processing of appeals, especially during the court's deliberation process; and judicial and secretarial productivity within chambers, especially for the preparation of written opinions.

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10. United States Court of Appeals for the Third Circuit, Internal Operating Procedures at v (1974).

The study attempted to address the following questions:

1. What impact might word processing equipment have on

   --secretarial productivity

   --internal office procedures within a judge's chambers

   --the production and preparation of opinions

   --the appellate decision-making process--in particular, the drafting of opinions?

2. What impact might electronic mail capability in each office have on

   --internal office procedures

   --the delay in distributing and delivering opinions among offices

   --the appellate decision-making process--in particular, the dissemination and review of draft opinions?

Description of Equipment

Each appellate judge's office and a few administrative offices (clerk of court, circuit executive, and central pool secretaries) were provided with a modern word processing system, a Digital Equipment Corporation (DEC) word processing models WP100 or WP102. Each system contains:

1. a video display (cathode ray tube) station: a device resembling a television screen used to display typed text, and a keyboard console that allows text to be entered and edited. In two offices, circuit executive and secretarial pool, a dual video terminal display system was installed.

2. a printer: device that prints forty-five characters per second in high-quality typescript

3. dual "floppy" diskette drives: a device that permits text to be stored and retrieved from flexible discs, each of which can store up to 120 pages of text (two dual drives were installed in the circuit executive and secretarial pool offices)

4. a communications package: a software program and hardware adaptors that permit the word processing machine to transfer information to and from other word processors or computers.

This word processing equipment contains most text-editing features found in the more advanced word processor models. It can be used to telecommunicate over regular government telephone lines, with the Federal Judicial Center's Courtran II computers in Washington, D.C.

Word processors (also known as "text editors" or "automatic typewriters"), particularly video display word processors, allow each user to

store on magnetic medium (floppy disc) and recall for editing any typed text in any format

change rapidly both the content and format of text with or without printing text on paper

make corrections easily, quickly, and with assurance that the text is accurately printed

print high-quality, clean copies

more rapidly type original text (15 to 50 percent faster), and print text (500 to 1,000 percent faster) than on a standard typewriter

reproduce text on paper and/or transmit electronically to other machines for printing and/or visual review

rapidly prepare and print standard documents or forms.

The Third Circuit judges, like judges in many other federal appeals courts are not all permanently located in the same city. Although the court does sit in Philadelphia to hold conferences and oral arguments, their permanent chambers are spread among six cities within three states (Camden and Newark, New Jersey; Philadelphia, Pittsburgh, and Wilkes-Barre, Pennsylvania; and Wilmington, Delaware). Communication capability was provided in each word processing machine to permit judges to circulate documents among each other through telecommunications.

Research Instruments

To comprehensively assess the impact and value of these technologies on the workload within each judge's chambers and on the appellate case process itself, five distinct research techniques were used. A typing survey allowed evaluation of each offices's typing workload and capacity to prepare opinions and other court documents. An opinion circulation survey measured the delivery times for U.S. postal service among judges' offices-- in particular, the delivery schedules between each pair of the six cities within the circuit. An electronic mail transmission report allowed us to calculate the precise delivery times among judges' offices and tabulate electronic mail usage rates. Interviews and questionnaires for each judge and secretary revealed personal attitudes and preferences towards the adoption of the technology, and individual practices and informal administrative policies within each judge's office. An appellate case survey allowed us to compare changes in appellate processing time before and after the introduction of word processing and electronic mail technologies.

Typing Survey

The typing survey examined the typing production in each judge's office and the circuit executive's office during a three-week period from May 15 to June 5, 1978, several months after the word processing equipment was installed. A secretary after typing any document, completed a detailed log form (see appendix A) showing the author, purpose, priority requirements and length of each document typed, the typing machine used, and the amount of daily time spent at typing and at work. All eighteen secretaries working for ten circuit judges and a circuit executive located in the six cities submitted completed logs.

The typing survey followed word processing industry practices of sampling typing production over several weeks to estimate typing volumes, requirements, and characteristics. Since the content of the draft opinions is confidential and the survey could not be disruptive or obstructive, the amount of

information solicited and the number of days surveyed were somewhat limited. Rather than attempt a more comprehensive sampling effort--by sampling information at different times during the entire project and by collecting carbon copies of each document prepared--data was collected during a period the court believe represented the normal work pace of the Third Circuit.

No unique events occurred during the survey period to disrupt the circuit's normal work flow. Although some judges and secretaries were absent for part of the survey there were no more absences than would normally be anticipated.

Some data collection problems did arise. In this survey, a few secretaries did not diligently record all typing information requested. One secretary frequently reported only the amount of time spent typing and the total number of documents typed; not listed were the number of lines typed or the identity of some documents. Her typing data are necessarily underrepresented in the survey. In another instance, the secretary sometimes did not separate other secretarial duties from her typing activities, thereby overestimating typing time. Overall, methodological errors in reporting tended to balance each other, and did not significantly affect the overall results of the Third Circuit typing survey. The survey limitations, however prevent assurance that we have accurate statistics of the work in each office.

Opinion Circulation Survey

During the typing survey in May and June, 1978, each secretary also completed a detailed log listing all opinions exchanged (see appendix D for sample instructions and reporting form). For each opinion sent or received, the secretary identified the document by author, case number, length, and recipient. The log also listed the manner in which the document was sent and the date it was actually sent or received. This survey was designed primarily to estimate the U.S. postal service delivery time for exchanging opinions.

Some secretaries were not diligent in recording the number, names of recipients, and date for every opinion sent from their

offices. However, the number of opinions recorded was sufficient to proceed with the analysis of postal delivery times.

Electronic Mail Transmission Report

A complete software program was prepared to monitor unobtrusively and to track continuously each electronic mail transmission in the Third Circuit. The comprehensive data from the electronic mail transmission reports provided an extremely reliable log of the telecommunication exchanges among the circuit offices. Each time a judge or administrator contacted the Courtran II computer facility to either send a document, inquire if any documents were awaiting transmission, or receive a document, the computer automatically registered the identity of the user, the date and time for each activity, the type of activity (send, receive, or inquiry), and the success or failure for each transmission.

This report permitted detailed tabulation and analysis of the entire electronic mail service. Although the computer program contained some diagnostic information when a particular transmission failed, the monitoring system could not identify the precise cause of the problem: computer hardware, computer software, telephone lines, or word processor failure.

Interviews and Questionnaire

Each participating judge and secretary was interviewed in person or by telephone sometime during the project to elicit information about perceptions and attitudes. The interviewees were asked to comment on

- work styles and habits concerning the preparation and drafting of opinions, bench memoranda, and other court papers
- formal and informal office procedures, especially those affecting typing workload and the preparation of opinions
- flow of work and documents within the office and among colleagues in the circuit

judgments on typing and opinion review priorities, policies, and requirements

impact and influence of word processing and electronic mail technologies on office practices and procedures

role of law clerks and their needs for typing support

personal knowledge of and facility with the equipment.

Interviews and questionnaires were structured and standardized to tabulate group judgments and attitudes and to enable direct comparisons between offices.

Appellate Case Tracking Survey

Not every appeal requires an opinion. According to the 1977 statistics of the Administrative Office of the U.S. Courts (A.O.), opinions are written in 50 percent of terminated cases among the U. S. Courts of Appeals, and in only 25 percent of cases in the Third Circuit. Because this study examined the impact of two technologies on the opinion preparation process, it was considered desirable to assess only cases resulting in written opinions.

Although the A. O. annually reports some median interval times for cases terminated in each Court of Appeal, those A. O. statistics are insufficient for detailed analysis of a comparison between pre-project and project cases.

Both technologies were fully implemented in early March 1978. Beginning April 1, 1978 all opinions filed were classified as cases potentially influenced by one of the technological innovations--"project cases." A control group consisting of all cases with opinions filed between July 1, 1976 and December 31, 1977 was labeled "pre-project cases."

The following case information was obtained, for both project and pre-project cases, from court records listed in the clerk of the court's docket book entries of the Third Circuit and the Confidential Case Monitoring Report: the case name and docket number, category of case, names of judges assigned to the panel

and judge assigned to prepare the draft opinion, type of appellate proceeding (oral argument or submission of briefs only), type of opinion (per curiam or signed), and vote. In addition, date was obtained for each of the four crucial events in the appellate process: filing of notice of appeal, listing for disposition on the merits (oral argument or submission of briefs), distribution of draft opinion to the panel, and filing of the opinion. This information permitted the tabulation on each appeal of the appeal time for various phases of both the litigants' preparation of the appeal and the court's review and deliberation. With this information, detailed statistical comparisons could be made between cases preceding and following the introduction of both technologies, and other contributing variables or procedures normally associated with the appellate process could be assessed.

The only opinions excluded from this survey were from those cases the Third Circuit classifies as "CAV." CAV cases are atypical in that they do not reflect procedures normally followed by this court. These cases are delayed after submission or oral argument because of extenuating circumstances or legal precedent or policies. These exempt cases fall into three categories: cases that need additional substantative information from contesting parties, including additional information in the briefs; cases that need additional portions of the record (transcript of trial proceedings or court documents) from the trial court or government agency; or cases delayed pending a Supreme Court decision or another circuit court decision. CAV cases eliminated only 2 to 3 percent from each sample.

III. TYPING WORKLOAD AND THE NEED FOR WORD PROCESSING

Secretarial Support

At the time of the typing survey, there were eighteen full-time secretaries working in the Third Circuit judges' chambers or circuit executive offices. Each judge was supported by at least one full-time secretary and most judges had additional half-time or pool secretarial support.

There are at least three principals in each judge's office (the judge and two law clerks) who may require typing support from the secretary. The ratio of secretary per principal in judge's office (table 1) varies from .33 to .67, with an overall ratio of .5 secretary per principal (two principals per secretary). This support ratio is quite low, considering the additional administrative and secretarial support duties assigned most secretaries in the circuit, and compared to support services in efficient law firms. Law firms typically employ one secretary or administrative support for each attorney (.75 to 1.0 secretary per principal).

The ninety-fifth Congress approved an increase in the authorized secretarial support for each Third Circuit judge to two full-time secretaries in each judge's office (an increase to .67 secretary per principal).

Types of Documents

Documents typed in judges' chambers can be conveniently classified in six categories: opinions (signed or per curiam), bench memoranda (prepared before oral arguments), judgment orders (prepared by the senior ranking judge on a panel, for issuance after oral argument or conference panel decision), speeches, general correspondence, and miscellaneous typing.

Each document category has its unique typing characteristics:

Opinions. Lengthy documents, typically ten to fifteen legal-size pages--although some per curiam opinions are short

TABLE 1

DISTRIBUTION OF SECRETARIAL SUPPORT
WITHIN THE THIRD CIRCUIT

Chambers/ Office	Number of Principals		Number of Secretaries		Secretaries per Principal	Principals per Secretary
	Judges	Admin. Personnel or Law Clerks	Full-Time	Pool Secretary (Full-Time equiv.)		
Judge A	1	2	1	1	.67	1.5
Judge B	1	2	1	.5	.50	2.0
Judge C	1	2	1	.5	.50	2.0
Judge D	1	2	1	.5	.50	2.0
Judge E	1	2	1		.33	3.0
Judge F	1	2	1		.33	3.0
Judge G	1	2	2		.33	3.0
Judge H	1	2	1		.33	3.0
Judge I	1	2	1	.5	.50	2.0
Judge J	1	2	2	.5	.67	1.5
Totals	10	20	12	3.5	0.5	2.0

(four to five pages) and some signed opinions are lengthy (forty to sixty pages). Each opinion consists of a standard title page fully identifying the case, participating parties (litigants, counsel, and judges), and dates, followed by text with appropriate footnotes on each page and virtually no repetitive text. Each opinion normally requires moderate to heavy revisions, several typed drafts, and expeditious production of each revision.

Bench Memoranda. These documents vary in length depending on the nature of the legal issue and the author's (usually a law clerk) writing style. Memoranda have a lower typing priority than opinions. They usually contain no repetitive text and seldom require revision or retyping.

Judgment Orders. Short documents (one or two pages) consisting of a standard format and standard text (also known as "boilerplate form," i.e., nearly all text is similar except identification of case and parties, and possibly a small portion of the narrative). Judgment orders are seldom revised; they are frequently produced by the senior members of the court.

Correspondence. Short documents (one or two pages) or letters, such as acknowledgement letters to law clerk applicants and law professors. Correspondence is seldom revised and it may or may not contain repetitive or standard text with variable information.

Speeches. Longer documents (five to ten pages). Speeches generally undergo moderate revision. This category is a small proportion of typing demand.

Miscellaneous. Usually very short internal memos, letters, and correspondence (under one page). These documents are seldom revised.

Typing Time

A Third Circuit judge's secretary averages eight-and-a-quarter hours per working day in the office (table 2); however, the average number of hours spent typing varies tremendously according to the judge initiating the work and by work day within

TABLE 2

THIRD CIRCUIT TYPING SURVEY:
SECRETARIAL TIME SPENT TYPING

Chambers/ Office	Days Worked During Survey Period	Avg. No. Hours at Work Per Day	Avg. No. Hours Typing Per Day	Percentage Work Time Typing	Range of Typing Time Low %	Range of Typing Time High %
Judge A						
A1	14	8.8	3.3	37	11	61
Judge B						
B1	16	8.9	4.7	52	15	89
Judge C						
C1	15	9.4	7.3	78	63	89
Judge D						
D1	15	9.0	1.7	19	6	39
Judge E						
E1	5	8.1	1.2	15	0	29
Judge F						
F1	15	8.4	2.3	27	9	47
Judge G						
G1	11	8.2	1.5	18	10	30
G2	5	8.0	1.0	13	0	25
Judge H						
H1	9	8.6	2.7	31	14	53
Judge I						
I1	14	9.2	1.8	19	3	45
Judge J						
J1	15	7.3	3.1	42	0	76
J2	13	8.0	5.5	69	50	88
Pool Secretaries						
(Judges A & J)	14	7.0	4.7	67	27	91
(Judges A & J)	14	8.5	4.6	54	35	73
(Judges B & I)	14	7.4	1.7	26	0	40
(Judges C & D)	13	7.7	1.6	20	0	56
Circuit Executive						
CE1	14	8.0	0.3	4	0	31
CE2	11	8.0	2.2	29	6	48
Avg. For All Circuit Secretaries	12.6	8.3	2.1	25		
Avg. For Judge And Pool Secretaries	12.6	8.3	2.2	25		

the same office. On any particular day the proportion of the work day spent in typing ranges from 0 to 90 percent, and the average time a secretary spent in typing during the survey period ranged from 15 to 78 percent of a normal eight-hour day.

This rapidly fluctuating demand for typing services is common in nearly all offices and is characteristic of small businesses, legal offices, and companies in which one or two secretaries serve only a few executives and professionals. Apparently, the flow of typing work in the Third Circuit is uneven, often unpredictable, and difficult to control considering the nature of the work, the size of the staff, and diverse locality of the offices.

A typical secretary in a Third Circuit judge's office spends approximately 25 percent of the time typing. This percentage is high when compared to industry and business offices, where secretaries' typing time averages 15 to 25 percent (without word processing equipment), or to corporate legal departments, where secretarial personnel spend 23 percent of their time typing.[11] Thus, Third Circuit secretaries spend slightly more time typing than their counterparts in private practice or corporate legal departments.

Typing Volume

The workload trends identified in the typing time statistics are consistent with volume statistics. Typical typing volume varies greatly among offices and secretaries (table 3). Typing volume data (table 4) reveal the diversity of the typing load within the circuit--volumes ranged from 0 to 2,600 lines per day, and the total during the three week survey period ranged from approximately 2,000 to 19,000 lines. In a few instances, typing

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11. According to Traux, Smith, and Associates Inc., Word Processing and Office Systems Consultants, Wilmington, Delaware (unpublished word processing industry surveys, 1977).

TABLE 3

THIRD CIRCUIT TYPING SURVEY:
AVERAGE NUMBER OF LINES TYPED PER
EIGHT-HOUR DAY PER SECRETARY

Secretary	Total Lines Typed During the Survey Period	Eight Hour Day Equivalents Worked During the Survey Period	Average Number of Lines Typed per Eight Hour Day
A1	5,559	15.4	361
B1	7,174	17.8	403
C1	5,323	17.6	302
D1	5,105	16.9	302
E1	397	5	79
F1	9,275	15.8	587
G1	4,150	11.3	367
G2	472	5	94
H1	3,063	9.7	316
I1	3,426	16.1	213
J1	9,785	13.7	714
J2	8,960	13	689
CE1	469	14	34
CE2	2,531	11	230
Pool Secretaries			
A & J	12,540	14.9	842
A & J	8,512	12.2	698
B & I	1,851	13	142
C & D	1,875	12.5	150
Avg. for All Secretaries	5,026	13.1	384
Avg. for Judge and Pool Secretaries	5,467	13.2	414

TABLE 4

THIRD CIRCUIT TYPING SURVEY:
TYPING VOLUME INFORMATION

Chambers/ Offices	Total Lines Typed	Average Lines Typed/Day	Documents Produced or Edited
Judge A	13,953	930	73
Judge B	8,659	577	110
Judge C	5,865	391	40
Judge D	5,300	353	43
Judge E	10,201	680	63
Judge F	9,303	602	159
Judge G	4,501	300	37
Judge H	2,368	158	19
Judge I	3,942	263	65
Judge J	18,820	1,233	208
Circuit Exec.	3,000	200	55
Other Judges	4,585	306	14
Totals for All Offices	90,497	6,031	886
Totals for Judges and Pool Secretaries	87,497	5,831	833

volume was reduced because of judges' vacations. Typing volume, like typing time, is considerably heavier in circuit chambers (414 lines per day per secretary) than in corporate legal departments (159 lines per day per secretary) or Smith and Traux industry typing standards (138 lines per day per secretary).[12]

Typing production appears to be more related to work demands than to available secretarial support. Some secretaries are required to provide substantially more typing production than other secretaries at the same location or at other offices. Again, the data strongly suggest that typing is unevenly distributed, and demands are moderate to heavy in nearly all Third Circuit offices.

Opinion Preparation Process

Opinions are the longest documents prepared by circuit judges. Within the Third Circuit they average twelve pages each and constitute the largest single document category (37 percent of all typing) of typing work (table 5). Several procedures are used for initial drafting and revision of opinions in the circuit. Some judges usually prepare the initial draft of an opinion, then assign law clerks to undertake additional research and make further revisions. In other chambers, the law clerk prepares the initial draft, working from bench memoranda or discussion notes. Typically, a law clerk submits a draft opinion in longhand or personally types several drafts on a standard typewriter. In a few courts, the law clerk has learned to use the word processing machine or the secretary types the law clerk's initial draft into the word processing machine. In too many cases, opinions initially prepared by a law clerk are not typed on a word processing machine until after the judge reviews and edits the initial draft.

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12. The Smith and Traux statistics were based on 369 typing surveys of 5,900 secretarial positions within a variety of companies and government agencies.

TABLE 5

THIRD CIRCUIT TYPING SURVEY:
VOLUME INFORMATION BY DOCUMENT CATEGORY

	Lines Typed		Documents Typed		
	Number	% of All Lines	Number	Avg. No. Pages	% of All Documents Typed
Opinions	33,792	37	156	11.8	18
Bench Memos	14,778	16	95	5.3	11
Judgement Orders	2,082	2	41	3.9	5
Correspondence	20,196	22	393	2.9	44
Speeches	2,451	3	13	7.9	1
Miscellaneous	16,911	19	188	4.0	21
Total	90,210	100	886	5.1	100

Per curiam or signed opinions go through numerous revisions in most offices. A per curiam opinion normally requires two to three revisions, and a signed opinion frequently needs five to six drafts--nine or ten revisions are not unusual. As might be anticipated, earlier drafts involve more substantative changes while final revisions normally entail correcting typographical errors or making minor refinements in writing style or wording.

Revision Typing

Revisions are a very productive application for word processing technology. Opinion preparation requires substantial rewriting and typing revisions (table 6) . Although the preparation of speeches often requires retyping, speeches constitute only 3 percent of the typing workload.

Typing opinions accounted for 37 percent of all lines typed (Table 5,) but an enormous 76 percent of all revision work (lines retyped) and 48 percent of all documents retyped (calculated from tables 5 and 6).

Similarly, revision typing accounted for 70 percent of all opinions typed and a substantial 57 percent of all lines typed for opinions. The difference in these two percentages should be anticipated. More lines are typed in the initial drafts, since the entire opinion must be keyboarded into the word processor. Consequently, 29 percent of first-draft opinions accounted for 43 percent of all lines typed for opinions.

Revision typing in the Third Circuit accounted for 30 percent of all lines typed and 26 percent of all documents typed. Compared to an all-industry average of 16 percent reported by the Smith and Traux surveys, the circuit court has moderate amounts of revision typing. Law firms and corporate legal offices, however, report considerably higher revision typing figures of 57 percent and 49 percent respectively. Differences in work styles and revision practices again demonstrate the considerable variations among the judges (table 7).

Word processing equipment permits efficient revisions and avoids retyping the entire original text when only portions of

TABLE 6

THIRD CIRCUIT TYPING SURVEY:
REVISION TYPING BY DOCUMENT CATEGORY

Document Category	Revision Typing as a % of all Lines Typed			Revision Typing as a % of all Documents Typed		
	None	Light	Heavy	None	Light	Heavy
Opinions	43	13	44	29	35	35
Bench Memos	88	12	0	93	7	0
Judgement Orders	83	6	1	71	27	2
Correspondence	89	10	1	84	14	2
Speeches	33	51	17	46	31	23
Miscellaneous	88	6	7	84	13	3
Weighted Average	70	12	18	74	17	9

TABLE 7

THIRD CIRCUIT TYPING SURVEY:
REVISION TYPING BY AUTHOR

Office Location	Revision Typing as % of All Lines Typed			Revision Typing as % of All Documents Typed		
	None	Light	Heavy	None	Light	Heavy
Judge A	30	26	44	61	22	17
Judge B	65	13	21	81	13	6
Judge C	52	27	22	58	22	19
Judge D	61	36	2	80	15	5
Judge E	82	16	1	77	19	4
Judge F	65	17	18	90	7	3
Judge G	58	4	38	65	6	29
Judge H	100	0	0	100	0	0
Judge I	59	24	16	85	11	4
Judge J	83	15	2	73	22	5
Circuit Exec.	34	36	30	55	31	14
Other Judges	82	18	0	82	18	0
Law Clerks (ALL)	30	41	29	43	37	20
Weighted Average	70	12	18	74	17	9

the text need correction. All the figures substantiate that heavy revision typing is associated with opinions and to some extent with other documents, and that opinion typing turnaround can be significantly reduced by using word processing equipment rather than standard electric typewriters.

Typing Priorities

There are no formal typing priorities in the Third Circuit. However, most judges have prescribed guidelines that establish the preparation of opinions as the highest priority, followed by judgment orders and the judge's correspondence. Bench memoranda and speeches have the lowest priority.

Judges' materials normally have priority over law clerk requests. In many offices, secretaries provide only a modest amount of typing support to the law clerks; frequently, clerks are required to type their own documents as a condition of employment.

Opinion typing is often designated "rush" priority. Although defining rush work is subjective, most court personnel understand "rush" as refering to a document that must be prepared as soon and as rapidly as possible. Word processing technology permits faster keyboarding, editing, and printing of documents than standard electric typewriters.

In the Third Circuit rush typing represents 31 percent of all lines typed and 22 percent of all documents prepared (tables 8 and 9). The Smith and Traux typing surveys report 20 percent rush typing for all industries and only 3 percent rush typing in corporate legal departments. Once again, comparing Third Circuit workload to general industry and legal practices shows that the Third Circuit secretaries are under greater time pressures to produce documents than are secretaries in most organizations.

Opinion typing constitutes the largest proportion of all rush demands with 44 percent of all lines typed. Since fewer changes are made in the last few drafts of an opinion, the finding that the percentage of rush lines for opinions was less than the percentage of rush documents indicates that final draft opinions

TABLE 8

THIRD CIRCUIT TYPING SURVEY:
RUSH TYPING BY DOCUMENT

Document Type	Rush Typing as % of All Lines Typed	Rush Typing as % of All Documents Typed
Opinions	44	52
Bench Memos	18	13
Judgement Orders	16	27
Correspondence	28	14
Speeches	11	23
Miscellaneous	25	18
Average for the Circuit	31	22

TABLE 9

THIRD CIRCUIT TYPING SURVEY:
RUSH TYPING BY AUTHOR

Author	Rush Typing as % of All Lines Typed	Rush Typing as % of All Documents Typed
Judge A	14	4
Judge B	36	39
Judge C	48	53
Judge D	11	3
Judge E	46	31
Judge F	6	3
Judge G	0	0
Judge H	19	33
Judge I	62	21
Judge J	34	27
Circuit Exec.	33	15
Other Judges	42	29
Law Clerks	56	61
Average	30	22

are more likely to be completed quickly than initial drafts of an opinion.

Improvements in Typing Productivity

A Third Circuit secretary typically produces at least twice the typing output of corporate legal secretaries. The legal and industry productivity figures cited in this report were usually based on typing done on standard electric typewriters. Since 60 percent of Third Circuit typing during the survey period was prepared on word processors, the high productivity is attributable to word processing technology.

Manufacturers make various claims that word processing equipment can increase productivity four- to tenfold compared to standard typewriters. Improvements in productivity depend on the type of documents prepared. A recent court study classifies court documents according to four groups: manuscripts (opinions and speeches), standard forms and letters (judgment orders), standardized complaints and jury instructions, and correspondence and memos.[13] The two largest typing requirements in circuit courts are for opinions and correspondence. The report estimated it is more realistic to expect word processing to increase productivity by 200 to 300 percent for documents typically produced by an appellate court.[14]

Time Savings

It is evident that without word processing, Third Circuit secretaries would spend substantially more time retyping documents, in addition to their present burdensome typing load. No typing surveys had been previously completed in any appellate court, so their is no precise data on production times without word processing equipment. However, a projected time savings can

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13. National Center for State Courts, Business Equipment and the Courts: Guide for Court Managers (1977), pp.14-16.

14. Id. at 15-16.

be estimated from the available productivity and workload information.

Since approximately 60 percent of all Third Circuit typing is handled on word processors, about 60 percent of typing time is spent on these machines. Secretaries average 2.1 hours per day typing; therefore, 1.25 hours (2.1 x .6) per day are needed on the word processors. Given the high proportion of revision and rush typing--about one-third of all typing--and the productivity gains (300 percent), circuit secretaries would require an estimated 3.75 hours per day using electric typewriters instead of word processors. Adding the .84 hours per day for typing presently completed on standard typewriters, a total of 4.6 hours per day (56 percent of the work day) would be required without word processing. Word processing equipment has permitted secretaries to handle their typing work in about half the time--2.1 hours with word processing compared to 4.6 hours without word processing.

Opinion typing on the word processor is associated with a high proportion of revisions (59 percent of typed lines and 76 percent of documents). Obviously, a substantial amount of the time saved (estimated at 50 to 80 percent) is associated with opinion preparation.

IV. MAIL SERVICE AND THE NEED FOR ELECTRONIC MAIL

Description of Electronic Mail

There is no simple way to describe the field of electronic mail services or equipment. Services can comprise the electronic transmission of typed text only, graphics only, pictorial reproductions of original documents, computer information, or single- or multi-page documents. Equipment can include facsimile devices, word processing machines, telephones, or large-scale computers.

In this study, electronic mail service was limited to the transmission of typed single- or multi-page text. Each Third Circuit judge and administrative office was given a word processing machine containing communication features capable of storing, transmitting, and receiving typed text over regular telephone lines and receivers. The communications feature permit a judge to conveniently send any document already prepared and stored on the word processing machine.

The Third Circuit electronic mail system is unique. Besides being the first court to implement an electronic mail exchange system, the court is among the few word processor users anywhere in the United States to transmit electronically lengthy narrative documents on a regular basis by means of a centralized "electronic post office" system.

Each user's word processor was connected to a standard dial telephone and communications modem. A modem is an electronic box that converts digital coded information in a word processor or computer to standard audio frequencies for transmission over regular voice-grade telephone lines to another computer or word processor. In the earlier stages of the project, a device with a slower transmission speed (300 baud rate acoustic couplers) was installed, but all users have now received higher speed (1,200

baud rate AT&T Model 212A Dataphone modems) devices. These devices transmit information four times faster than the original equipment.

When judges or administrators want to use the centralized electronic mail system, they dial a Washington, D.C. telephone number that connects them to a Federal Judicial Center's Courtran II computer. After providing appropriate passwords and codes to satisfy security procedures, the user has access to the electronic mail system. Each Third Circuit court office can use the electronic mail service anytime during the week (8:00 A.M. to 6:30 P.M.); hours can be extended by request.

One communications approach--heavily promoted by word processing and facsimile vendors--is to permit each user to transmit directly to another word processing machine, circumventing a central computer. The normal distribution of documents among Third Circuit offices makes such a direct transmission approach impractical. A document is sent simultaneously to several offices whether by U.S. postal or electronic mail service. If a direct transmission approach were adopted, the sender would have to separately contact each recipient, carefully coordinate activities with each recipient--to avoid disrupting work in progress on some recipient's word processor--and substantially increase transmission time. It takes the same amount of time to send the document to a centralized Courtran II computer as to send to just one word processor using the direct approach.

The Third Circuit judges can, if they want to, adopt a direct transmission approach with their existing word processors. Presently, an average of four judges or administrators receive each document distributed (table 10), a fact that strongly supports the establishment of the centralized electronic mail system adopted by the Third Circuit.

The electronic mail system stored on the Courtran II computer permits easy performance of several functions according to any priority chosen. The computer system allows each judge or administrator to

TABLE 10

THIRD CIRCUIT ELECTRONIC MAIL SURVEY:
TRANSMISSIONS SENT AND RECEIVED

Week of	Transmissions Sent	Transmissions Received	Total	Transmission Reliability
6/5- 9	6	9	15	55%
6/12 - 16	25	91	116	78%
6/19 - 23	19	64	83	78%
6/25 - 30	21	92	113	76%
7/3 - 7	26	95	121	89%
7/10 - 14	45	211	256	90%
7/17 - 21	42	157	199	88%
7/24 - 28	22	70	92	83%
7/31 - 8/4	36	170	206	84%
8/7 - 11	35	140	175	94%
8/14 - 18	25	88	113	78%
8/21 - 25	22	93	115	91%
8/28 - 9/1	33	147	180	89%
9/4 - 8	30	167	197	91%
9/11 - 15	34	146	180	90%
9/18 - 22	20	96	116	88%
9/25 - 29	26	109	135	85%
10/2 - 6	15	98	113	81%
10/9 - 13	23	92	115	90%
10/16 - 20[a]	40	163	203	91%
10/23 - 27	13	22	35	93%
10/30 - 11/3	28	95	123	86%
11/5 - 10	31	123	154	87%
11/13 - 17	37	112	149	91%
11/20 - 24	29	132	161	91%
Total	683(20%)	2,782(80%)	3,465(100%)	

[a] Telecommunications (electronic mail) speed was increased from 300 to 1,200 baud rate.

send document(s): transmit one or more documents of any length to the computer for distribution to one or more designated recipients. Third Circuit users who are not designated recipients do not have access to the document.

receive document(s): transmit one or more documents of any length from the computer to recipient's word processing machine.

cancel document(s): cancel sending of any document or a particular receipt of a document that has not yet been picked up by the recipient(s).

verify status of document(s) sent: at ar time verify which documents sent have or have t been received by each recipient.

verify status of pending document(s) to be received: determine which documents are awai ig electronic tranmission pick-up to user's word processor. Inquiry log lists the name of document, name of sender, date sent, approximate document size, and amount of time to transmit the document.

record history of document(s): retain an archival listing of all documents sent and received, including the name of the document, date sent and received, and the names of parties sending or receiving each document.

Transmission Reliability

Electronic mail technology, in general and particularly the unique computer configuration and procedures developed for the Third Circuit court, are still in the embryonic stage of development.

An electronic mail transmission failure, called an abort, is comparable to losing a connection during a telephone conversation. Unfortunately, when such a failure occurs, the entire document must be transmitted again. Failures cause irritating interruptions, require tasks to be performed again, and result in lost personnel time. During peak typing production and under severe time pressures, electronic mail failures become un-

acceptably time-consuming and disconcerting--especially when a twenty-five minute (fifty page) transmission aborts after twenty minutes.

The reliability of electronic mail service has been assessed continuously. Although transmission reliability has improved, it has not achieved an acceptable reliability level (95 percent reliability) or desirable level (99 percent). (See table 10). The present rate of transmission failures is a primary reason for the court's mixed feelings towards electronic mail. If high reliability could be assured, there would be nearly unanimous agreement to retain and expand the use of this technology. When additional communications features are provided with the new word processing equipment (see chapter six) , these failures will be less disconcerting and less disruptive of other word processing activities.

The chances for transmission failures increase as transmission time increases (table 11). Transmission time--rather than transmission speed, size of document, or user--is associated with transmission reliability. For example, the chance of an abort is seven times greater if transmission time is approximately twenty minutes than if it is three minutes. Adopting higher transmission speeds did not appreciably change the overall abort rate. Since the volume of information transmitted per minute increased fourfold by changing from 300 to 1200 baud, the chances for a complete transmission without an abort of short- or moderate-size documents improve.

Comparison of Electronic Mail to U.S. Postal Service

Despite the intermittent transmission failures, electronic mail has been used extensively and has made dramatic improvements in the distribution of opinions and memoranda within the court.

TABLE 11

THIRD CIRCUIT ELECTRONIC MAIL SURVEY:
FREQUENCY OF TRANSMISSION DISRUPTIONS

	300 Baud[a] (July-Sept. 1978)		1200 Baud[b] (Mid-Oct. to Mid-Nov.)	
Transmission Time of Document Received (Minutes)	Number of Documents	Number of Transmission Disruptions	Number of Documents	Number of Transmission Disruptions
1-5	1172	71 (6%)	493	34 (7%)
6-10	160	14 (9%)	56	22 (39%)
11-15	76	25 (33%)	10	4 (40%)
16-20	87	35 (40%)	15	8 (53%)
21 +	185	67 (37%)	0	0
Total	1,680	212 (13%)	574	68 (12%)

[a] At 300 baud rate, it takes approximately 100 seconds to transmit one legal-size page.

[b] At 1,200 baud rate, it takes approximately 25 seconds to transmit one legal-size page.

Over a six-month period, several thousand documents and more than ten thousand pages of draft opinions, related memoranda, and correspondence were exchanged electronically (table 10), usage rates varied, and an extensive number of short and longer documents were transmitted (table 12).

Although many documents consisted of two- or three-page memos, or excerpts from draft opinions, a substantial number of documents (20 percent) exceeded ten pages, and some draft opinions contained more than sixty pages.

Each judge uses the electronic mail service several times a day (a few use it twice a day; most offices use it four or fives times daily) to send, receive, and make status inquiries through his electronic mailbox. During a typical week, a judge sends three or four documents, receives twelve to fifteen documents, and requires two hours of electronic mail time, including inquiries.

The opinion circulation survey (table 13 and 14) shows varying patterns of U.S. postal service delivery schedules among Third Circuit users. Ideal conditions exist for postal service in several Third Circuit cities: judges' chambers in Camden, Newark, and Pittsburgh are located at each city's main post office. The average delivery time for mailed opinions is slightly under two days (38.6 hours), but delivery times vary depending upon distance and destination. Same day delivery is nonexistent; one-day delivery is provided less than half the time (45 percent). Delivery within two days is normally anticipated, but almost 10 percent of mailings take more than two working days (table 13).

Using electronic mail sharply reduces the delivery time between all Third Circuit offices. Compared to an average two days for postal delivery, electronic mail averages less than half a day (table 15). The speed of electronic mail is not related to distance or destination (the average delivery time between any of the cities is either .3 or .4 days), but on the frequency and timeliness that a recipient inquires through his electronic mailbox. Each recipient decides when to take the mail from his

TABLE 12

THIRD CIRCUIT
OPINION CIRCULATION AND ELECTRONIC MAIL SURVEYS
NUMBER OF DOCUMENTS EXCHANGED BY PAGE SIZE

Number of pages	U.S. Postal Service (May-June 1978)	Electronic Mail (July-October 1978)
1-5	46	1,503
6-10	47	196
11-15	36	110
16-20	9	90
21 +	31	203

NUMBER OF DOCUMENTS EXCHANGED BY PAGE SIZE
AND BY MONTH DOCUMENTS RECEIVED

ELECTRONIC MAIL TRANSMISSIONS

Number of Pages	July	Aug.	Sept.	Oct.	Totals
1-5	435	346	386	336	1,503 (72%)
6-10	41	64	54	37	196 (9%)
11-15	43	18	24	25	110 (5%)
16-20	25	32	29	4	90 (4%)
21 +	58	80	45	20	203 (10%)
Totals	602	540	538	422	2,102 (100%)

TABLE 13

OPINION CIRCULATION AND ELECTONIC MAIL SURVEYS:
COMPARATIVE DELIVERY TIMES FOR
POSTAL SERVICE AND ELECTRONIC MAIL (EM)

Hours For Delivery[a]	Postal Service May,1978 NO.	%	EM May,1978 NO.	%	EM Sept,1978 NO.	%
1	--	--	--	--	204	41
3	--	--	--	--	110	22
6	1	1	10	45	39	8
24	35	45	8	36	146	29
48	35	45	3	14	3	.5
72	5	7	1	5	0	0
96 +	1	1	0	0	0	0

Delivery	Postal Service May 1978	EM May 1978	EM Sept. 1978
Same Day (Within Same Working Day)	1%	45%	71%
One-Day (By Next Working Day)	46%	81%	99%
Two-Days (Within Two Working Days)	91%	95%	100%
Three-Days	99%	100%	100%
Avg. No. of Hours	38.6	19.9	8.9

[a] Opinion Circulation survey in May 1978 did not tabulate electronic mail deliveries under six hours.

TABLE 14

THIRD CIRCUIT OPINION CIRCULATION SURVEY:
OPINIONS SENT AND RECEIVED

Date	Opinions Sent	Opinions Received	Total Opinions Exchanged
Mon. 5/15	8	6	14
5/16	5	7	12
5/13	13	9	22
5/18	1	14	15
5/19	0	32	32
5/22	2	9	11
5/23	10	4	14
5/24	0	17	17
5/25	2	8	10
5/26	9	1	14
5/30	7	25	32
5/31	3	8	11
6/1	1	9	10
6/2	4	12	16
6/5	0	6	6
TOTAL	65	171	236

TABLE 15

OPINION CIRCULATION AND ELECTRONIC MAIL SURVEYS:
AVERAGE DELIVERY TIME EXCHANGED
BY U.S. POSTAL SERVICE AND ELECTRONIC MAIL

	Pitts.		W.Barre		Newark		Camden		Phila.		Wilm.		Average	
Location	Avg.	#	Avg.	#	Avg.	#	Avg.	#	Avg.	#	Avg.	#[b]		
Pittsburgh														
Postal	1.5	(2)	1.8	(5)	2.2	(15)	1.7	(6)	1.8	(4)	2.0	(1)	2.0	(33)
EM	0.3	(9)	0.3	(14)	0.4	(50)	0.4	(14)	0.5	(69)	0.3	(34)	0.4	(190)
Wilkes-Barre														
Postal	1.8	(5)	-------		1.5	(9)	1.8	(4)	1.0	(2)	2.0	(1)	1.6	(21)
EM	0.3	(14)			0.2	(21)	0.3	(7)	0.4	(31)	0.4	(21)	0.3	(94)
Newark														
Postal	2.2	(15)	1.5	(9)	1.0	(1)[b]	1.4	(14)	1.5	(2)	1.1	(8)	1.6	(49)
EM	0.4	(50)	0.2	(21)	0.1	(13)	0.4	(21)	0.3	(66)	0.4	(39)	0.3	(210)
Camden														
Postal	1.7	(6)	1.8	(4)	1.4	(14)	----		----		1.3	(3)	1.5	(27)
EM	0.4	(14)	0.3	(7)	0.4	(21)			0.4	(24)	0.6	(14)	0.4	(80)
Philadelphia														
Postal	1.8	(4)	1.0	(2)	1.5	(2)		(0)		(0)		(0)	1.5	(8)
EM	0.5	(69)	0.4	(31)	0.3	(66)	0.4	(24)	0.1	(4)	0.3	(60)	0.4	(254)
Wilmington														
Postal	2.0	(1)	2.0	(1)	1.1	(8)	1.3	(3)		(0)[a]	----		1.3	(13)
EM	0.3	(34)	0.4	(21)	0.4	(39)	0.6	(14)	0.3	(60)			0.4	(168)

FOOTNOTES FOR TABLE 15

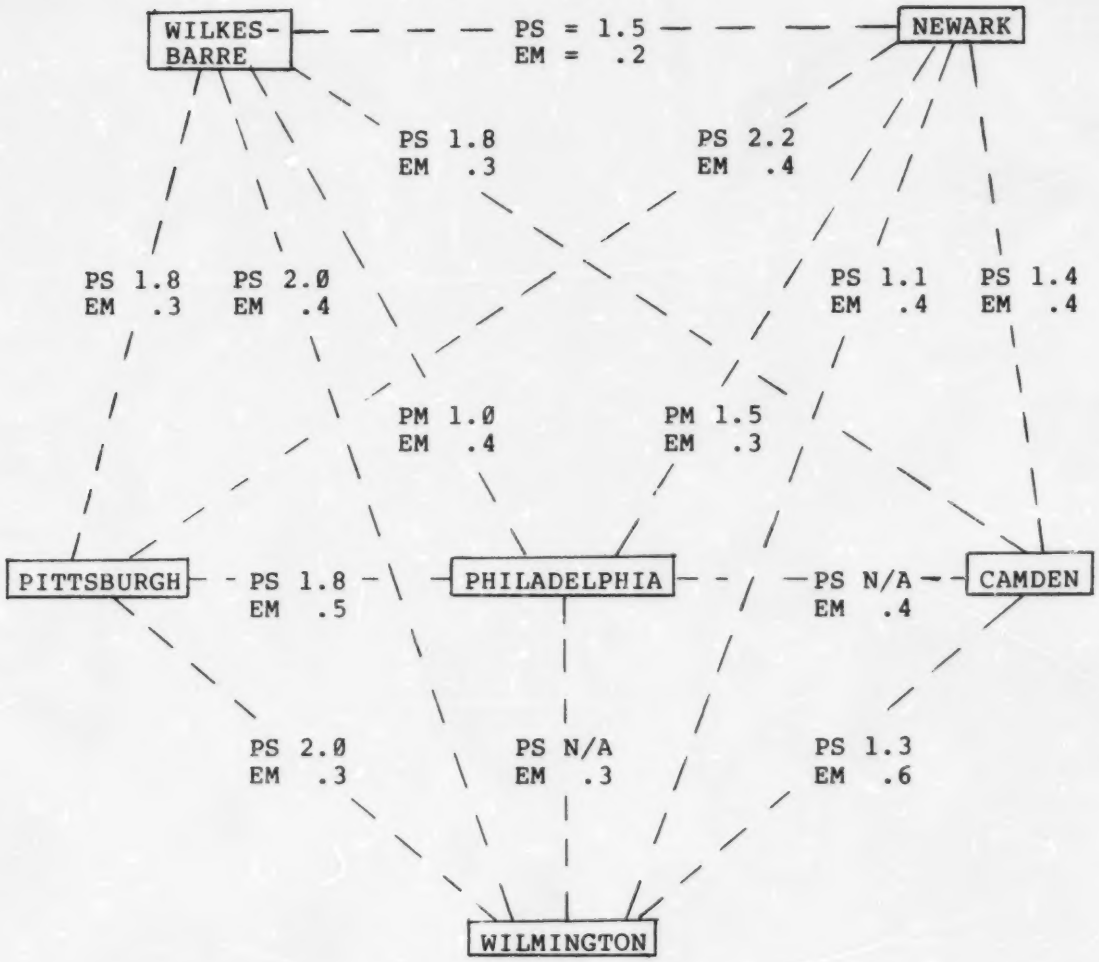
Note: All times are listed in fractions of 24-hour days. Weekends were not included in computing delivery times. The table is designed like a highway mileage chart. The figures in the two diagonal portions of the table are identical.

a Several opinions were hand carried between offices.

b Overall average delivery time was 1.6 days for postal service and 0.4 days for electronic mail.

TABLE 16

SCHEMATIC REPRESENTATION OF
AVERAGE DELIVERY TIME BETWEEN
POSTAL SERVICE AND ELECTRONIC MAIL
AMONG THIRD CIRCUIT LOCATIONS



KEY

PS: average delivery time in days using postal service
EM: average delivery time in days using electronic mail
N/A: no documents reported during the typing survey between locations

electronic mailbox. If a recipient were to check his electronic mailbox each hour rather than every three hours--the present inquiry rate for the Third Circuit--the delivery time would decrease further.

Electronic mail provides the most benefit in delivery service to more distant (Pittsburgh) or remote (Wilkes-Barre) localities, but all localities show major time savings from 60 percent to 85 percent (table 15).

Electronic mail almost insured the receipt of documents within one work day, and nearly 75 percent of documents are received in the same work day (Table 13). Urgent or high-priority documents have been received and responses returned within a few minutes. Overall, electronic mail has reduced delivery time within the Third Circuit by 75 percent.

Using the average delivery rates for U.S. postal and electronic mail services, adoption of the electronic mail system would save an estimated four and quarter days on each opinion. This calculation assumes that the author of an opinion sends one or two drafts to two panel members; the panel-approved opinion is distributed once to the entire court for review; and on average each electronic mailing is at least one day faster. The actual time saved on a specific opinion depends on the number of times a draft is distributed, whether a concurring or dissenting opinion is also prepared, and the time each judge takes to respond to the draft.

Costs of Electronic Mail

Compared to U.S. postal service, electronic mail requires additional equipment and technical resources, and correspondingly, additional expenditures. Whether electronic mail is presently competitively priced when compared with U.S. postal service was not a crucial concern for this study. But how expensive would electronic mail be if regularly and more heavily used?

There are both fixed and variable expenditures related to electronic mail. The principal fixed costs for each Third

Circuit electronic mail recipient are:

Word processor communication features	$1,500 (one-time charge)
Telephone	10/month
Modem (1,200 baud)	40/month

The variable costs are

Telephone transmission time (GSA rate)	12/hour
Courtran II computer connect time[15]	3/hour

Annual cost projections for the Third Circuit would be:

Fixed costs are

Word Processor communication feature (Capital expenditure pro-rated over 5 years: $1,500 x 13 machines/5 years)	$ 3,900
Telephones and modems (13 offices-$50/mo. x 13 machines)	7,800

Variable costs are

Telephone transmission time ($12/hr. x 52 weeks x 25 hrs./wk)	15,600
Courtran II Computer connect time ($3/hr. x 25 hrs./week x 52 weeks)	3,900
	$31,200

15. Electronic mail requires little computer usage time, and there would be no additional computer usage costs to federal courts using electronic mail through the Courtran II computers.

These projections make the following assumptions, based on estimated Third Circuit usage during the evaluation:

separate telephone and modem in each office
1200 baud rate dial-up modems used
federal long-distance telephone service (FTS) charged at GSA data transmission rates
90 percent transmission reliability rate
600 documents received per month
25 hours per week of computer connect time
4-5 inquiries per day per user
7-8 pages per document.

These cost estimates suggest that at present usage rates, a typical seven page document sent by electronic mail to a specific recipient would cost approximately $4.44 ($32,000 total cost per year divided by 7,200 documents per year). The same seven-page document would cost $0.28 by first class mail. Private express delivery services charge $5.00 or more for one-day delivery, and standard facsimile devices (presently used in several federal courts, including the Third Circuit) would cost $10.10 per document, assuming that 50,000 pages are transmitted yearly (however at the Third Circuit's present usage rate of facsimile transmissions, the cost is $25.00 to $30.00 per page).

If electronic mail were permanently installed with word processing equipment, costs would decrease as volume increased. Since the court has generally restricted electronic mail distribution primarily to draft opinions and related correspondence, the court's usage rate could substantially increase.

Table 17 projects the Third Circuit's total electronic mail costs and costs per document at different levels of usage and by size of document.

TABLE 17

THIRD CIRCUIT ELECTRONIC MAIL SURVEY:
ESTIMATED COSTS FOR THE THIRD CIRCUIT

Number of Documents (Annual)	Cost Per Document (7-8 page)						Cost per Document (1-2 page)
	Fixed Costs	Variables Costs	Total Costs	Fixed Costs	Variable Costs	Total Costs	Total Costs[a]
5,000	$11,700	$15,950	$27,650	$2.34	$3.19	$5.53	$1.84
7,200	11,700	19,500	31,200	1.62	2.71	4.33	1.44
10,000	11,700	24,700	36,400	1.17	3.47	3.64	1.21
15,000	11,700	33,450	45,150	0.78	2.23	3.01	1.00
20,000	11,700	42,200	53,900	0.59	2.11	2.70	0.90
25,000	11,700	51,000	62,700	0.47	2.04	2.51	0.84

[a] Cost for a short (1-2 page) document is calculated by dividing average (7-8 page) document cost by three.

V. APPELLATE CASE PROCESSING

An important measure of appellate court efficiency is the speed with which a typical appeal is processed. The extent to which word processing and electronic mail expedite the processing of an appeal is a crucial measure of the potential value of these technologies for an appellate court. An appeal has two principal stages: the perfection of the appeal (controlled by the parties involved) and the court's deliberation process.

Nearly all appellate courts have established rules and procedures governing the litigants' perfection of the appeal. The Court of Appeals for the Third Circuit which is recognized as an open, innovative appellate court, was the first appellate court to publish its internal rules.[16] The publication covers the essential processes and procedures followed by this court from the distribution of the litigants' briefs to the final termination of the appeal.

(For those unfamiliar with the Third Circuit procedures, particularly those concerning the preparation, review, and publication of written opinions, see appendix B).

Stages Analyzed in Appellate Case Processing

The Administrative Office of the United States Courts (A.O.) publishes various statistics on each circuit court's workload and median case processing time. These statistics are inadequate for this study because the A.O. does not provide data on separate appeals requiring per curiam or signed opinions only, the amount of time opinion writers take to prepare opinions, or the amount of time the court takes to review opinions.

A separate survey needed to be completed in order to compare case processing time before and after installing the word

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16. United States Court of Appeals for the Third Circuit, Internal Operating Procedures (1974).

processing and electronic mail equipment. The methods used for case selection and sampling are discussed in chapter two of this report. The four dates of key appellate events on each case (filing of appeal, formal submission on the merits, distribution of draft opinion to panel, and rendering of decision) permitted the tabulation of several crucial time intervals:

1. Filing of appeal to filing of opinion by court (column A in tables 19 through 23): the total number of days for both the perfection of the appeal and deliberation by the court. This time interval measures how long it takes to process an appeal (column A equals columns B plus C)

2. Filing of appeal to formal submission on the merits (column B): the number of days for the perfection of the appeal. Neither of the two technological innovations has any impact on this appellate stage, and there should not be any major differences between the pre-project versus project cases

3. Formal submission on the merits to rendering the court's written opinion (column C): the number of days for the court to prepare and release a reasoned opinion. This time interval measures the deliberation stage, and both technologies can affect this stage. (column C equals columns D plus E)

4. Formal submission on the merits to opinion draft distribution to the panel (column D): the number of days the opinion writer takes to prepare his draft opinion. Word processing technology has its greatest impact during the opinion preparation stage, but electronic mail has no affect at this stage

5. Opinion draft distribution to the panel to rendering the court's written opinion (column E): the number of days for circulation to the panel and for the entire court to review and comment on the decision (unnecessary for per curiam opinions) and send the opinion to the clerk of the court. Electronic mail has its impact on this stage.

Description of Opinions

In the years surveyed (1976 to 1978), criminal appeals constituted approximately 20 percent of written opinions (table 18). Although a substantial number of written opinions were per curiam (25 percent), the court has increased its preference for signing opinions from 67 percent to 83 percent. Within the Third

TABLE 18

WORD PROCESSING AND ELECTRONIC MAIL PROJECT:
DISTRIBUTION OF WRITTEN OPINIONS

	Pre-Project Cases	Project (WP-EM) Cases
TYPE OF CASE		
Civil	208 (80%)	132 (84%)
Criminal	52 (20%)	25 (16%)
TYPE OF OPINION **		
Signed	174 (67%)	131 (83%)
Per Curiam	86 (33%)	26 (17%)
CASE PRESENTATION		
Oral Argument	224 (86%)	136 (87%)
Submitted (No Orals)	36 (12%)	26 (17%)
COMPOSITION OF COURT **		
Only Circuit Judges	160 (62%)	122 (78%)
District Judge Sitting	100 (38%)	35 (22%)
VOTE		
Unanimous	207 (80%)	127 (81%)
Concurring	13 (5%)	10 (6%)
Dissenting	35 (14%)	20 (13%)
Both (Concur and Dissent)	5 (2%)	0 (0%)
JUDGE		
A	31 (12%)	16 (11%)
B	37 (14%)	20 (14%)
C	22 (9%)	13 (9%)
D	36 (14%)	16 (11%)
E	30 (12%)	22 (15%)
F	27 (11%)	17 (11%)
G	21 (8%)	17 (12%)
H	22 (9%)	8 (6%)
I	34 (13%)	17 (12%)

Note: Judge J joined the circuit in late 1977, and prepared eleven written opinions during 1978 that were included in this study.

** Statistically significant change at .01 level

Circuit, nearly all written opinions are prepared by panels; and there was less reliance upon the temporary reassignment of district judges into appellate panels in 1978 (22 percent) than in the 1976 - 1977 period (38 percent). The preparation of written opinions is reasonably distributed over the entire court. Each active appellate judge prepares from 9 to 15 percent of the written opinions. The voting pattern on decisions has remained stable in recent years; the court has voted unanimously in 80 percent of written opinions, and dissenting opinions have been filed in 13 percent of the cases.

Pre-project Case Processing Time

The time it took for the Third Circuit to deliberate and prepare a written opinion before the introduction of word processing was approximately one-fourth (84 days out of 331 days) the total appellate processing time. This ratio is consistent with previous findings in state courts where the perfection of the appeal consumes more than one-half to three-quarters of the entire appellate process.[17] The pre-project time taken by the Third Circuit to process appeals is about average among U.S. Courts of Appeals, but substantially less than in most state appellate courts.

The opinion writer's preparation of the draft opinion took two-thirds (59 out of 84 days) of the court's deliberation time, while panel review and circulation encompassed slightly less than a month.

Although the federal speedy trial provisions enacted by Congress do not directly impose time constraints on the appellate courts, criminal appeals were completed two months sooner than civil appeals; however, most of the time saved was in the perfection of the appeal (table 19).

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17. D. Meador, Appellate Courts: Staff and Process in the Crisis of Volume (1974).

TABLE 19

CASE PROCESSING TIME FOR
PRE-PROJECT CASES (JULY 1976 TO DEC 1977)

	Number of Cases	[A] Filing to Decision	[B] Filing to List	[C] List to Decision	[D] List to Draft	[E] Draft to Decision
			(Number of Days)			
TOTAL	260	331	247	84	59	24
TYPE OF CASE		**	**		**	
Civil	208	342	257	85	61	24
Criminal	52	284	206	78	53	25
TYPE OF OPINION		*		**	**	**
Signed	174	343	244	99	71	28
Per Curiam	86	306	252	53	35	18
VOTE		**		**	**	**
Unanimous	207	313	239	74	55	20
Concurring	13	396	283	113	78	35
Dissenting	35	379	262	117	75	43
Both	5	548	390	158	100	58
Judge				**	**	**
A	31	339	268	71	50	21
B	37	284	239	45	27	18
C	22	346	234	112	79	33
D	36	345	265	80	61	20
E	30	310	227	84	56	28
F	27	315	207	108	83	25
G	21	373	269	104	76	28
H	22	349	237	111	78	33
I	34	343	271	73	52	21

KEY
Filing: Filing of notice of appeal
List: Listing for disposition on the merits (oral argument or submission)
Draft: Draft opinion distributed to court panel for review
Decision: Opinion filed with the Clerk of the Circuit
** Statistically significant difference within category at the .01; * Statistically significant difference at the .05 level

The adoption of per curiam (memorandum) opinions has been extolled by advocates as a method to expedite the opinion writing process.[18] The Third Circuit drafting and review procedures regarding the issuance of per curiams work well. Per curiam opinions were produced twice as fast as signed opinions during the pre-project survey period.

The efficacy of eliminating oral arguments is another appellate policy hotly debated among lawyers, jurists, and researchers. In the pre-project period, the Third Circuit reviewed approximately 15 percent of appeals submitted on the merits without oral arguments. The court prepared and released written opinions almost three weeks faster if only briefs and appropriate court documents were submitted to the panel.

It was expected that the panel's vote might significantly affect the time the court took to deliberate and render an opinion. A concurring or dissenting opinion added approximately forty days to the preparation process.

The largest pre-project time variation in the court's opinion preparation process was related to judge assignments. The most efficient opinion-writing judge prepared opinions two-and-a-half times faster than the slowest judge. The more efficient judges are also among the most productive judges in the circuit (table 18).

The opinion writer's preparation of the draft opinion--not the time for the panel and the entire court to review the draft--accounted for the time differences among judges. Apparently, a judge's work style, work priorities, opinion preparation procedures within chamber, and utilization of law clerks and secretaries have a strong impact on processing time.

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18. P. Carrington, D. Meador & M. Rosenberg, Justice on Appeal (1977).

Impact of Technology on Case Processing Time

The implementation of word processing technology had a consistent and substantial influence on decreasing the amount of time for the Third Circuit took to prepare and render written opinions. The total processing time for an appeal requiring a written opinion was reduced substantially by approximately three weeks--a 6 percent reduction in total appeal time (table 20, column A). The Third Circuit's deliberation time was reduced by approximately eighteen days--a 21 percent reduction in the time to draft opinions (table 20, column C). These time savings occurred almost exclusively in the time opinion writers took to prepare drafts (table 20, column D). Only a miniscule savings in time was found for opinion dissemination and review by the entire bench (table 20, column E). As anticipated, there was no change in the average time litigants took to perfect appeals.

These findings strongly support a program to provide permanent word processing technology for the Third Circuit, but the findings pertaining to electronic mail were less encouraging. Merely tabulating and examining total case statistics without any more refined analysis can be misleading. Moderate changes in the appeals (percentage of criminal appeals), appellate process (percentage of appeals without oral argument), or appellate procedures (percentage of signed opinions or panel voting patterns) might have totally or partially caused the time changes. To insure that these findings were valid, further statistical analysis was conducted.

With a few exceptions, all major trends noted between the two sample groups (pre-project and project cases) are supported by analysis of various subcategories. Every major classification breakdown (by type of case, type of opinion, voting pattern, etc.) shows substantial reduction of the time to draft opinions after instituting word processing technology. For the bulk of the opinions normally prepared, improvements averaged two to three weeks, especially if the opinion was a civil appeal, a signed opinion, a unanimous opinion or an appeal decided with oral arguments. The court's total deliberation time was reduced

TABLE 20

CASE PROCESSING TIME FOR
PRE-PROJECT AND WORD PROCESSING ELECTRONIC-MAIL CASES

	Number of Cases	[A] Filing to Decision	[B] Filing to List	[C] List to Decision	[D] List to Draft	[E] Draft to Decision
			(Number of Days)			
TOTAL		*		**	**	
Pre	260	331	247	84	59	24
WP-EM	157	312	246	66	44	23
TYPE OF CASE						
Civil		*		**	**	
Pre	208	342	257	85	61	24
WP-EM	132	319	252	67	43	23
Criminal						
Pre	52	284	206	78	53	25
WP-EM	25	275	209	66	45	21
TYPE OF OPINION						
Signed		*		**	**	
Pre	174	343	244	99	71	28
WP-EM	132	317	242	74	50	25
Per Curiam				**	**	*
Pre	86	306	252	53	35	18
WP-EM	25	287	262	25	12	14
VOTE						
Unanimous				**	**	
Pre	207	313	239	74	55	20
WP-EM	127	311	250	61	43	18
Dissent or Concurring		**		**	**	
Pre	40	384	267	116	75	41
WP-EM	38	317	229	88	47	41

TABLE 20 (CONTINUED)

	Number of Cases	[A] Filing to Decision	[B] Filing to List	[C] List to Decision	[D] List to Draft	[E] Draft to Decision
ORAL ARGUMENT				**	**	
Pre	224	331	242	87	62	25
WP-EM	136	315	246	69	46	22
SUBMISSION					*	
Pre	36	333	268	65	44	21
WP-EM	21	295	244	51	26	25
PANEL				**	**	
Pre	247	325	242	81	58	23
WP-EM	152	311	244	66	44	23

KEY
Filing: Filing of the notice of appeal
List: Listing for disposition on the merits (oral argument or submission)
Draft: Draft opinion distributed to court panel for review
Decision: Opinion filed with the Clerk of the Court
** Statistically significant difference at the .01 level
* Statistically significant difference at the .05 level

dramatically--20 to 30 percent. A detailed analysis of these sub-categories follows.

Type of case. Although only civil cases showed a statistically significant improvement in the time required to process opinions, there were substantial decreases in the preparation time for both civil and criminal appeals, civil cases averaging eighteen days and criminal cases eight days. Since criminal appeals might have received higher typing priorities in some chambers before word processing was introduced, there was less potential for word processing to effect time reductions in preparing criminal opinions. As a result of the technology, civil and criminal opinions are prepared by the court in about the same amount of time (table 21), although the time litigants take to perfect the appeal still differs substantially. Apparently, the improved production and productivity provided by word processing eliminates the need for establishing typing priorities, at least for written opinions. Electronic mail may have some impact on the processing of criminal cases which show a four-day decline in opinion review time (table 20).

One might conjecture that criminal appeals were processed faster because per curiam opinions were prepared more frequently; however, a statistical analysis did not verify this hypothesis--a per curiam opinion is about as likely in a civil as in a criminal appeal.

Type of Opinion. Word processing technology is a valuable tool for preparing either lengthy, detailed signed opinions or the shorter, concise per curiam opinions. In either case, opinion preparation time was reduced by over three weeks (table 20).

The electronic mail capability appears to significantly improve--by four days--the processing of per curiam opinions. Panel members give high priority to responding to all draft opinions, but per curiam opinions do not normally require circulation among the entire court. The Third Circuit's Internal Operating Procedures (IOP) may act as disincentives, particularly regarding signed opinions, thereby reducing the potential impact of electronic mail. The present rules permit a reviewing judge to

TABLE 21

CASE PROCESSING TIME FOR
PROJECT CASES (APRIL 1978 TO NOV. 1978)

	Number of Cases	[A] Filing to Decision	[B] Filing to List	[C] List to Decision	[D] List to Draft	[E] Draft to Decision
			(Number of days)			
TOTAL	157	312	246	66	44	23
TYPE OF CASE						
Civil	132	319	252	67	43	23
Criminal	25	275	209	66	45	21
TYPE OF OPINION				**	**	**
Signed	132	317	242	74	50	25
Per Curiam	25	287	262	25	12	14
VOTE						**
Unanimous	127	311	250	61	43	18
Concurring	10	322	250	72	43	30
Dissenting	20	315	219	96	49	48
Judge				**	**	
A	16	334	270	64	38	26
B	20	271	226	45	23	22
C	13	308	247	61	38	23
D	16	290	228	62	34	29
E	22	316	235	80	58	23
F	17	344	255	89	67	22
G	17	307	233	74	54	20
H	8	337	269	69	50	19
I	17	308	271	38	18	19
J	11	327	240	87	62	25

KEY
Filing: Filing of notice of appeal
List: Listing for Disposition on the merits
Draft: Draft opinion distributed to court panel for review
Decision: Opinion filed with the Clerk of the Court
** Statistically significant difference at .01

wait eight days without responding to the opinion writer, rather than using electronic mail to send faster "no comment" responses.

If electronic mail is retained permanently, it is anticipated that the Third Circuit will reduce its time limit for review of signed opinions by four to five days.

Even with the introduction of both technologies, per curiam opinions are still produced much faster than signed opinions (table 21). The case processing time between a per curiam and signed opinion remained stable (fifty-day difference) across the pre-project and project cases.

Voting Pattern. Again, word processing significantly reduces the opinion preparation time for either unanimous opinions or dissenting or concurring opinions. The time savings are more dramatic for dissenting and concurring opinions (table 20).

Use of Oral Argument. Word processing technology helped lower the preparation time for both orally argued and submitted appeals, but the improvements were more substantial for argued appeals.

Opinion Writer. Word processing technology consistently reduces draft processing time for nearly all judges. The time savings varied by judge (tables 22 and 23), with six judges showing statistically significant improvements and two other judges showing substantial improvements. For several judges the time savings were almost one month, for others, a few weeks. These figures indicate that word processing technology substantially contributed to the time savings for nearly every judge in the Third Circuit.

Electronic mail seemed to have a modest effect for most judges. There was a small but consistent decrease in the review and circulation time for signed opinions for seven of the nine judges (table 23).

Word processing and electronic mail helped judges--whether they were originally high or low in efficiency (number of days to complete opinions) or productivity (number of written opinions produced). However, there is still a wide divergence between the fastest opinion writers, whose signed opinions are completed in

TABLE 22

CASE PROCESSING TIME FOR
PRE-PROJECT AND PROJECT CASES BY JUDGE
(ALL OPINIONS)

		Number of Cases	Filing to Decision	Filing to List	List to Decision	List to Draft	Draft to Decision
				(Number of days)			
TOTAL			*		**	**	
Pre		260	331	247	84	59	24
WP-EM		157	312	246	66	44	23
Judge							
A	Pre	31	339	268	71	50	21
	WP-EM	16	334	270	64	39	26
B	Pre	37	284	239	45	27	18
	WP-EM	20	271	226	45	23	22
					**	**	
C	Pre	22	346	234	112	79	33
	WP-EM	13	308	247	61	38	23
						**	
D	Pre	36	345	265	80	61	20
	WP-EM	16	290	228	62	34	29
E	Pre	30	310	227	84	56	28
	WP-EM	22	316	235	80	58	23
				*	*	*	
F	Pre	27	315	207	108	83	25
	WP-EM	17	344	255	89	67	22
G	Pre	21	373	269	104	76	28
	WP-EM	17	307	233	74	54	20
					**	*	**
H	Pre	22	349	237	111	78	33
	WP-EM	8	337	269	69	50	19
					**	**	
I	Pre	34	343	271	73	52	21
	WP-EM	17	308	271	37	18	19

KEY: Same as tables 19 to 22

TABLE 23

CASE PROCESSING TIME FOR
PRE-PROJECT AND PROJECT CASES BY JUDGE
(ONLY SIGNED OPINIONS)

		Number of Cases	Filing to Decision	Filing to List	List to Decision	List to Draft	Draft to Decision
SIGNED			*		**	**	
Pre		172	343	244	99	71	28
WP-EM		132	317	242	74	50	25
JUDGE							
					**	**	
A	Pre	11	382	280	103	70	32
	WP-EM	16	324	270	64	39	26
B	Pre	17	295	232	63	40	24
	WP-EM	17	269	218	51	27	24
					**	**	
C	Pre	17	380	252	128	90	38
	WP-EM	12	306	242	64	41	23
						**	
D	Pre	31	335	250	85	65	21
	WP-EM	15	296	231	65	36	30
E	Pre	24	307	221	86	58	28
	WP-EM	16	321	222	99	74	25
				**	**	**	
F	Pre	22	317	199	118	91	27
	WP-EM	16	343	250	93	69	24
G	Pre	13	414	293	121	93	28
	WP-EM	11	313	206	107	81	26
					**	**	**
H	Pre	17	358	234	122	86	36
	WP-EM	8	337	269	69	50	19
					**	**	
I	Pre	22	360	273	87	62	24
	WP-EM	10	330	283	46	25	22

KEY: Same as tables 19 to 22

approximately 45 to 50 days and the slowest opinion writers whose opinions take 100 days (table 21).

VI. IMPLEMENTING A PERMANENT WORD PROCESSING AND ELECTRONIC MAIL SYSTEM

Word Processing and Electronic Mail Use in the Third Circuit

Third Circuit Attitudes and Perceptions

Each judge and the senior secretary in each judge's chambers responded to a short questionnaire checking their attitudes toward word processing and electronic mail technologies (table 24).

Almost all the Third Circuit respondents want to permanently retain the word processing equipment and believe this technology has greatly benefited the court. They were pleased with the capabilities of word processing equipment.

Electronic mail capability did not receive such a strong endorsement. Although a majority of the court would retain the existing electronic mail system (among active judges the vote was six in favor, three opposed), several judges and secretaries expressed some reservations. Most judges and secretaries want better transmission reliability--90 percent reliability is too low--and greater flexibility than is now available on the system. The respondents agreed that if reliability could be improved (to the 98 - 99 percent range) and if both typing and electronic mail communications could be provided simultaneously (new word processor models contain this feature), electronic mail should be retained.

Most judges' personal comments about the technologies were positive. They believe that word processing technology

> decreases the time needed to retype opinions, but does not require a judge to modify work habits or office policies
>
> might not affect the opinion preparation process because it does not change their work procedures

TABLE 24

JUDGE AND SECRETARY ATTITUDES TOWARD
WORD PROCESSING AND ELECTRONIC MAIL

Question	Responses	Judges	Secretaries
What value, if any, has the word processing equipment, exclusive of the communications capability, had for you?	Substantial	9	9
	Moderate	1	1
	Small	0	0
	None	0	0
What value, if any, has the communications capability (electronic mail) had for you?	Substantial	3	2
	Moderate	4	6
	Small	2	2
	None	1	0
What is you overall feeling about the word processing (exclude the communications--electronic mail--feature) system?	Favorable	9	10
	Unsure	1	0
	Unfavorable	0	0
What is your overall feeling about the electronic mail capability?	Favorable	7	6
	Unsure	2	4
	Unfavorable	1	0
If it were only your decision, would you permanently retain the:			
word processing machine, exclusive of the electronic mail--communications feature--capability, in the Third Circuit?	Yes	9	10
	No	1	0
electronic mail capability in the Third Circuit?	Yes	6	5
	No	4	5
electronic mail capability, if it had better reliability (fewer transmission failures) and the capacity to both type one document and telecommunicate (send or receive by electronic mail) simultaneously?	Yes	10	10
	No	0	0

reduces the likelihood that new errors will appear in revised versions

keeps the drafting process moving (e.g., makes it easier to keep a particular opinion in mind and to change and sharpen the opinion even at the last minute).

Most secretaries expressed similar viewpoints, but were generally even more favorable than the judges. They understood better the advantages and limitations of the technologies, and they stated that the technologies would effect substantial time savings not only in chambers, but also in overall appellate case processing time.

Use by Clerk of Court

Traditionally, the opinion writer prepared the original typescript and a dozen duplicate copies which were released by the clerk of court. The introduction of word processors and electronic mail allowed the official opinion to be forwarded, received, and reproduced at the clerk's office within an hour instead of two days. This process has permitted the circuit to officially release opinions to litigants two days earlier.

In addition, this technological process would permit the circuit to expedite the printing of slip opinions by either offset printing (camera-ready copy)--preparing high-quality printed copy using the word processor system[19]--or phototypeset printing--providing a printing company with the text in machine-readable form that would eliminate the need for rekeyboarding the text (however, special typesetting and format codes would have to be entered by the printer). Several printing companies in the Philadelphia metropolitan area are beginning to offer electronic transmission services between the printer's office and a user's word processing system. The Third Circuit may test this service during 1979.

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19. This approach has already been instituted by the Eighth and Tenth Circuit Courts of Appeals.

The word processor installed in the clerk's office has been used only to receive completed opinions via electronic mail. The clerk's word processing machine can be used to provide office support for visiting judges, prepare emergency orders and motions for dissemination to the court, and speed up transmission and production of slip opinions. The clerk's office has not, to date, attempted to use the word processor for preparation of reports, court orders, and the like. Given the clerk's office parsimonious use of the word processor, the word processor should be removed from the clerk's office if electronic mail service is discontinued, or if typing support activities described above are undesirable.

Use by Law Clerks

There are many more law clerks than judges in the Third Circuit. In most offices, law clerks prepare bench memoranda and initial drafts of opinions. Their work requires a higher proportion of revisions and rush typing than that of judges. Yet law clerks authored only 14 percent of the lines typed and 9 percent of all documents typed by the circuit secretaries during the project survey period (table 25).

The apparent disparity between amount of typing demand and actual typing support stems from the inadequate secretarial and typing support provided in most chambers, where the available secretarial support could not adequately meet all demands, and judges' work was given priority. In several chambers, law clerks were employed with the understanding that they would have to do their own typing.

The lack of sufficient typing support for most law clerks causes delays in opinion preparation--usually several days. The problem is exacerbated when a law clerk prepares several preliminary drafts before submitting draft of the opinion for judicial review. Law clerk productivity could increase if additional typing support was provided. The additional secretarial support provided each judge will help particularly in the preparation of bench memoranda, which do not require retyping.

TABLE 25

THIRD CIRCUIT TYPING SURVEY:
A COMPARISON OF JUDGE ORIGINATED AND
LAW CLERK ORIGINATED TYPING

Category	Judge Originated	Law Clerk Originated
Total lines typed	69,355	12,354
% of all lines typed	77%	14%
Total documents typed	730	79
% of all documents typed	82%	9%
PERCENTAGE RUSH TYPING		
Lines	25%	56%
Documents	18%	61%
PERCENTAGE REVISION TYPING		
Lines	29%	48%
Documents	21%	57%

Two strategies are suggested: when the typing workload is manageable, the circuit secretary should type the law clerk's draft on the word processor; or when the workload is too heavy (as is often the case), each law clerk should be trained to use the word processor. Law clerks can easily learn the rudimentary skills needed to operate a word processor by using a self-paced training manual provided by the vendor, with additional assistance provided by the secretaries. In some chambers, law clerks were easily taught to use the word processors for drafting opinions. They often had access to the equipment during regular office hours and in the evenings and on weekends.

Use for Judgment Orders

The ranking appellate judge on each panel drafts a judgment order before each appeal is reviewed. Each year, nearly a thousand proposed judgment orders are drafted, and approximately six hundred are issued. Judgment orders contain mostly standard text produced according to a prescribed format, with some variations in text to identify cases and parties. Because of this, judgment orders are ideally suited for quick, accurate production on the word processing equipment.

Recommended Word Processing Equipment for the Third Circuit

The results of the typing survey and the analysis of appellate case flow in the Third Circuit strongly suggest a need for the permanent installation of a video display, computer-based word processing system. Some basic features are definitely needed (editing, storing, and printing functions) but there is no need for some of the more complex features (mathematical computations or elaborate list or index processing) that some systems contain. Most of the better word processing systems have a basic set of features that are adequate for the efficient production of opinions and other court documents prepared in the judges' offices. This section contains a brief evaluation of the word processing system recommended for permanent installation in the Third Circuit.

All of the currently installed word processing machines in the Third Circuit are DEC WS100 or WS102 models. The new VT100 video terminals are a new DEC product with all the basic capabilities of the WS100 line, plus extended video display capability, greatly increased storage capacity, and foreground-background communications capability. These new word processors will be termed the WS81 (one-terminal system) and WS82 (two-terminal system) word processors. The systems will be three to four thousand dollars less expensive than the WS100 equipment now installed in the Third Circuit.

The WS81 and WS82 systems are recommended for word processing in the Third Circuit for several reasons. The equipment is easy to use and contains a good set of basic word processing text editing features. The WS81/82 hardware will extend the word processing software package considerably. In the past two years, DEC has announced seven new systems, all of which are compatible with the firm's previous offerings, and none of which require retraining operators. DEC is the world's largest minicomputer manufacturer, with a large staff of experienced field maintenance personnel. Given the number and location of the Third Circuit offices DEC maintenance support is probably at least equal to that of other word processing manufacturers. DEC will be offering foreground-background communications with the WS81/82 line. This capability will permit simultaneous electronic mail communications and secretarial typing.

Given the other advantages of the WS81/82 line, the fact that Third Circuit secretaries have already been trained on this equipment is an important consideration. Retraining will be minimal if a WS81/82 word processor is installed. Also, the WS81 word processor is extendable to a WS82 word processor. Thus, an additional terminal could be added should the need arise in the future. Although there is no pressing current need for additional storage capability, the new WS81 will offer the largest storage capability currently available for this type of word processing system.

For the Third Circuit, DEC word processing equipment offers the best overall combination of features, price, extendability, and maintenance support among the available systems. DEC word processors currently lack certain editing features--automatic footnoting, automatic hyphenation, and automatic paragraph numbering--that are now becoming available on other systems. These are all useful functions for operators, and DEC reports it will be adding them in the next year as new software releases are made available.

Utilization of Word Processing

Not all typing can be more efficiently handled on a word processor. A short one- or two-page document typed without any revisions and not containing any standard text can be as efficiently prepared, at less cost, on a standard typewriter.

Most Third Circuit secretaries report their primary function is typing, and they are continuously pressed to stay ahead of the work flow. They were concerned with the best use of their typing equipment. Recognizing the production efficiencies that a word processor can provide, Third Circuit secretaries shifted preparation of 40 percent of the documents and 60 percent of the typed lines from the typewriter to the word processor (table 26). In most cases, word processing equipment was used appropriately. An additional 10 percent of the Third Circuit's documents should be prepared on the word processors.

Training on Word Processing Equipment

The years of experience, age, skills (typing skills and previous exposure to word processing equipment) varied widely among Third Circuit secretaries. Nevertheless, all these secretaries are competently using the basic editing capabilities of the word processor. As a group, however, they do not fully understand or take advantage of some of the more advanced features and capabilities of their machines. These advanced features could save them considerable typing time. For example, standard-form reports or documents such as judgment orders lend

TABLE 26

THIRD CIRCUIT TYPING SURVEY:
COMPARISON OF TYPING VOLUME ON THE
WORD PROCESSOR AND OTHER TYPING EQUIPMENT

Item	Word Processing		Office Equipment (Electric, Mag Card, & Memory Typewriters)	
	Lines Typed	% Typed Within Each Document Category	Lines Typed	% Typed Within Each Document Category
OPINIONS				
Lines	32,599	96%	1,193	4%
Document	143	91%	13	8%
BENCH MEMOS				
Lines	4,375	29%	10,421	71%
Document	17	18%	78	82%
JUDGMENT ORDERS				
Lines	1,951	94%	131	6%
Document	53	80%	8	20%
CORRESPONDENCE				
Lines	8,682	43%	11,520	57%
Document	80	20%	313	80%
SPEECHES				
Lines	1,193	49%	1,258[a]	51%
Document	7	54%	6	46%
MISCELLANEOUS				
Lines	5,466	32%	11,445	68%
Document	60	32%	128	68%
REVISION				
Lines	23,726	86%	3,816	14%
Document	173	76%	55	24%
RUSH				
Lines	20,032	76%	6,401	24%
Document	122	66%	64	34%-
TOTAL TYPING				
Lines	54,248	60%	36,219	40%
Document	340	38%	548	62%

a Nearly all of this typing was done by one secretary on a memory typewriter.

themselves to efficient preparation on a word processor, but at the time of the survey few secretaries understood the technique for setting up this application, and none were using it. This situation exists, in part, because training took place only once: when the equipment was installed, but before the secretaries had an opportunity to become familiar with the equipment and discover where they needed further instruction in the more sophisticated uses of the machine. Many secretaries did not have the time or inclination to further review the word processing reference manuals provided for such advanced training.

To insure that secretaries are fully able to use both the basic and advanced features of a word processing system the following training recommendations are suggested.

Implementing word processing

Training for new operators should take place in two phases. Basic editing features should be taught during the first phase. The more advanced features should be taught after secretaries have had time to become familiar with the equipment and with the basic editing features.

The trainer should help secretaries set up typing applications on the equipment in the most efficient manner possible. An experienced trainer can set up these applications very quickly, whereas a new operator may not find the most efficient method for weeks or months. Assistance in setting up applications would best be given in the second phase of training.

Secretaries should be temporarily released from office duties during training periods. Pool secretarial support could be provided. New operators would need no more than two days of training operators for most video display word processors.

Circuit secretaries need assistance in setting up advanced applications that should be instituted when new software releases are made available (for the Third Circuit, this should be scheduled when WP81 machines are installed).

DEC Advanced Features

All Third Circuit secretaries should be taught to use

library routines: abbreviations, paragraph and document commands are easy to learn and will save considerable time when inserting standard text

user-defined keys (UDK): repetitive typing can be programmed and stored by UDK, saving typing time and repetitious typing commands. For example, the entire sequence of commands for printing a document--calling the print menu, restoring predefined print formats, and ordering a document printed--could be stored in a single UDK

list processing package: user can quickly and automatically print standard letters to various addressees, e.g., to answer law clerk applicant inquiries

super (macro) document control: this new capability available on the WP81 allows a secretary or law clerk to divide the document into as many segments as desired for referencing, editing, and electronic transmission

additional screen formatting capabilities on the WP81

background-foreground communications capability: permits the user to transmit one document via electronic mail and simultaneously type or print another document.

Law clerks were not initially trained to use the word processors. Several clerks have become very proficient on their own with some assistance from the secretaries. Considering the potential benefits, any law clerk who is interested should be encouraged to learn to use the word processor.

Electronic Mail for the Third Circuit

Electronic mail has provided faster delivery of court documents among all Third Circuit offices. Yet the average time for the court to review and file an opinion has not been reduced.

Any technology might provide faster and improved service, but it cannot guarantee how the consumer will utilize the derived

benefits. In this situation, electronic document transmission provides faster document exchanges among offices, but it cannot ensure how quickly a judge will review and respond to a draft opinion or memorandum. In an appellate court, the slowest member of the court determines the norm, particularly when the draft opinion is circulated. The Third Circuit's present eight-day review time limit needs to be altered to achieve time savings. The present time limit was established, in part, to compensate for the uncertain and lengthy postal delivery (one judge proposed to extend the time to ten days because of further deterioration in postal service). The present rule does not require a judge to respond; therefore, more than one week can elapse without any action being taken. If the court would lower this time limit to three or four days, and suggest a response be sent to the opinion writer, the court's review time could be reduced.

Whether electronic mail service should be permanently retained is a difficult decision. The choice--like the selection of any advanced technology--is related to economic and administrative constraints. The costs can be reasonably estimated, although projected usage in the Third Circuit or other U.S. Courts of Appeals is uncertain.

Electronic mail costs more than using the U.S. postal service. However, electronic mail using word processing equipment costs less than facsimile equipment or commercial air express delivery services. Such comparisons assume no cost is associated with the speed of delivery or the certainty of receipt; it is not possible to estimate cost including these factors. Delay is often expensive, sometimes it is costly to litigants awaiting decisions, sometimes to the court itself. The proverbial adage "justice delayed is justice denied" is as important in the appellate process as in the trial process.

Telecommunications experts predict rapid growth in electronic mail, diminishing transmission costs, and a greater variety of services. Are the additional services worth the additional expenses? A final recommendation should probably be made by the court.

TABLE OF CONTENTS

	LIST OF TABLES	v	1/A9
	FORWARD	vii	1/A11
	EXECUTIVE SUMMARY	1	1/A14
I.	INTRODUCTION	5	1/B4
II.	RESEARCH OBJECTIVES AND METHODOLOGY	9	
	Objectives	9	1/B8
	Description of Equipment	10	1/B9
	Research Instruments	12	
	Typing Survey	12	1/B11
	Opinion Circulation Survey	13	1/B12
	Electronic Mail Transmission Report	14	
	Interviews and Questionnaire	14	1/B13
	Appellate Case Tracking Survey	15	1/B14
III.	TYPING WORKLOAD AND THE NEED FOR WORD PROCESSING	17	
	Secretarial Support	17	1/C2
	Types of Documents	17	
	Typing Time	19	1/C5
	Typing Volume	21	1/C7
	Opinion Preparation Process	24	1/C10
	Revision Typing	26	1/C12
	Typing Priorities	29	1/D4
	Improvements in Typing Productivity	32	
	Time Savings	32	1/D7
IV.	MAIL SERVICE AND THE NEED FOR ELECTRONIC MAIL	34	1/D9
	Description of Electronic Mail	34	
	Transmission Reliability	37	1/D12
	Comparison of Electronic Mail to U.S. Postal Service	38	1/D13
	Costs of Electronic Mail	47	1/E10

V. APPELLATE CASE PROCESSING 51

Stages Analyzed in Appellate Case Processing. . . 51 1/F2
Description of Opinions 52 1/F3
Pre-project Case Processing Time 54 1/F5
Impact of Technology on Case Processing Time. . . 57 1/F8

VI. IMPLEMENTING A PERMANENT WORD PROCESSING AND ELECTRONIC MAIL SYSTEM 66 1/G3

Word Processing and Electronic Mail Use in the Third Circuit 66 1/G3
Third Circuit Attitudes and Perceptions 66 1/G5
Use by Clerk of Court 68 1/G6
Use by Law Clerks 69 1/G8
Use for Judgment Orders 71 1/G10
Recommended Word Processing Equipment for the Third Circuit 71 1/G13
Utilization of Word Processing 73 2/A3
Training on Word Processing Equipment 73 2/A4
Electronic Mail for the Third Circuit 76
Word Processing and Electronic Mail Use in Other United States Courts of Appeals 78
Word Processing Equipment for Other Courts . . 79

APPENDIX A: Typing Survey Booklet. 81 2/A6
APPENDIX B: Excerpts from Internal Operating Procedures (IOP) Court of Appeals for the Third Circuit. 88 2/A13

Word Processing and Electronic Mail Use in other U.S. Courts of Appeals

How typical is the Third Circuit case flow and typing workload, compared to other Courts of Appeals? A typing survey and a case monitoring survey would be needed in each circuit to derive precise figures, but the 1977 A.O. statistics on Courts of Appeals provide us with a reasonable basis for comparison.

Several indices suggest that the Third Circuit workload and case processing time are representative of the Courts of Appeals. The median time for Third Circuit cases terminated after oral argument or submission ranked fifth of eleven circuits; the Third Circuit average was 9.1 months, compared to 9.4 months for all circuits[20]. The number of cases per authorized Third circuit judge was 177 cases (sixth highest in ranking) compared to 184 cases for all circuits[21]; and the active circuit judges sat in 79 percent of case participations in the Third Circuit--ranking the circuit sixth highest of all circuit courts which averaged 75 percent.[22]

Among the U.S. Courts of Appeals, 66 percent of cases reviewed on the merits are disposed by written opinion, but only 30 percent were disposed by written opinion in the Third Circuit.[23] This finding suggests that word processing technology might be even more beneficial in other circuits where opinion preparation work constitutes a higher proportion of the workload.

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20. Administrative Office of the U.S. Courts, 1977 Annual Report of the Director, table B4 (1977).

21. Id., Table 3.

22. Id., Table 7.

23. Id., Table 8.

Word Processing Equipment for Other Courts

There are several word processing systems, manufactured by various vendors, that can adequately meet the typing demands of other U.S. Courts of Appeals or District Courts. The following is a list of minimum or desirable features recommended for most courts. There are a number of additional features that can also be listed, depending on the types of documents and features desired in a particular court.[24]

Type of word processor: video display system

Screen size: 8 by 11 inches (minimum)

Lines of text displayed: 16 lines (minimum)

Storage medium: floppy disc (diskette) or fixed disc

Storage capacity per diskette/disc: 100 pages (250,000 characters) (minimum)

Format display: change anywhere in text

Type of printer: daisy wheel or jet ink

Printer speed: 45 characters per second (minimum)

Line Width: up to 13.2 inches

Carriage paper width: up to 15 inches

Character pitch/spacing: 10 or 12 (minimum)

Print fonts: standard

Printer capabilities:

Bidirectional printing (in both directions)

Simultaneous printing (produce one document while preparing another)

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24. Several technical or industry reports and articles describe an assortment of word processing equipment features; for example, Datapro Report on Word Processing (1979) (report published by Datapro Corp., Delran, New Jersey).

Subscripts and superscripts (print character one-half space above or below typed line, as in footnotes)

Right-justified or ragged-right margin

Printout queuing (several documents await printing while operator performs other duties)

Form Feeder: Single-sheet or continuous-feed paper

Text-editing capabilities:

Automatic margin adjustment

Automatic carrier return and wraparound (automatic carriage return when line is filled, and placing next word on the following line)

Automatic centering

Automatic input underline (permits operator to specify beginning and end of underline portion without backspacing and underlining the entire text)

Automatic line spacing (permits different line spacings)

Automatic page numbering and renumbering (automatically numbers the pages within a document or series of documents and renumbers after the text has been changed)

Automatic pagination and repagination (automatically divides a multi-page document into pages of specific length, and repaginates if document is altered)

Search and replace (permits operator to search through text for a particular word or phrase and quickly replace with another word or phrase)

Delete (Ability to quickly delete a character,--one letter, number or symbol-- a word, a line, a sentence, or an entire paragraph, page, or document)

Block move copy (easy movement of blocks of text--paragraph, page, or sentence--anywhere within text)

Term glossary/dictionary (ability to store standard or frequently used phrases, paragraphs, or documents for quick insertion into text).

APPENDIX A

TYPING SURVEY BOOKLET

Third Circuit Word Processing Survey
May 15th - June 5 th, 1978

GENERAL INSTRUCTIONS

Purpose of the Survey

The Federal Judicial Center is studying the uses of computer based word processing equipment in the third circuit. The results of this survey will help in determining equipment and features needed to satisfy the word processing needs of the circuit.

Typing Logs

This survey is primarily designed to determine how much typing and what kinds of typing you receive during the dates of the survey. This booklet contains a series of daily log sheets which will allow you to quickly describe the typing work you receive. As you will see when you read the instructions, this is not a "productivity" survey. We are not seeking information on the time you spend typing specific documents. We are interested in the volume and nature of typing generated within the circuit.

Communications Logs

In order to assess the performance of the communications system, we have a second log sheet for you to use to record the exchange of opinions among judges in the circuit. Specific instructions for both the Typing Logs and the Communications Logs are on the next page.

Survey Dates

The Typing Logs in the back of this booklet have been designed to collect information on all of the typing jobs you receive over a three week period. The survey should begin on Monday, May 15th and will conclude at the end of the day on Monday the 5th of June. Three mailers have been provided to return completed survey forms to Dr. Farmer at the end of each week. They should be put in the mail at the end of the day on the following dates:

Mail forms for first week: May 19, 1978
Mail forms for second week: May 26, 1978
Mail forms for third week: June 5, 1978

These booklets should be sent to:

Dr. Larry C. Farmer
J. Reuben Clark School of Law
Brigham Young University
Provo, Utah 84602

If you have any questions on the survey task please feel free to call me at (801) 374-1211 ext. 2423.

INSTRUCTIONS FOR THE LOG SHEETS

General Instructions

Please start a new log sheet for each workday during the period of the typing survey. If on some days you need more space than is provided on a single log sheet, simply continue to log that day's jobs on the next page of the booklet. Extra log sheets have been included in the booklet to allow for heavy typing days.

If on a given day you don't do any typing, write "no typing" or "no exchange of opinions" on the respective log sheets for that day and start a new one for the next day. If you are absent from work at any time during the period of the survey, put your name and the date you were absent on separate sheets for each day you are absent, and write "absent" on each of those sheets.

The logs have been designed to allow you to quickly fill in the necessary information. This logs should take you more than a few minutes per day to complete. Each job should be recorded immediately after it has been completed. It is important that you record all of the typing you do regardless of the size of the job.

Filling in the Typing Log Sheets

1. Document Name. In this space, provide a brief descriptive name for each document you type. For those documents which you will later be asked to revise, this name should be unique to the document you are typing. Each time a document is returned to you for revision typing you should use the same name you previously used to identify the document.

2. Author's Initials. In this space, put the initials of the judge, law clerk, or court administrator who gave you the document to type.

3. Machine Used. Note here which machine you used to type the document. For your convenience, the following codes are to be used: "T" for electric typewriter; "DEC" for the word processing machine; "Mag" for the mag card or memory typewriter; and "Mem" for memory typewriter.

4. Rush or Normal. Here you are to indicate how quickly the typing is to be done. If it needs to be done quickly and requires your immediate attention, put an "R" for rush; otherwise put an "N" for normal.

5. Light or Heavy Revision. This should be filled in only if you are doing revision work on a document you previously typed. Light revision (L) for this survey is defined as word modifications, typing corrections, and a few, but not extensive, sentence and paragraph corrections. More extensive revisions should be logged as heavy revision work (H).

6. Revision Number. Indicate here how many times you have revised this document. Put a "0" for original typing, and a "1" for first the revision, a "2" for the second revision, etc.

7. Total Lines Typed. Indicate the estimated number of lines you typed on the document in question.

8. Total Pages in the Document. Write the total number of pages in the document in this space.

Filling in the Typing Time Log

1. Total Hours at Work. Record the number of hours you spent at work for each day or the survey period.

2. Typing Time. Shade in the time line to reflect those times during the day in which you were typing. For accuracy, it would be best if you shaded in the appropriate amount of time each time you log in a job. This is only for convenience and accuracy in reporting, since there is no need to relate the time you enter to individual jobs, as we are only interested in the overall typing time requirements which you face in your office and not in the time required for individual tasks.

Filling in the Communications Logs

Purpose. The communications portion of the log sheets are to be used to record information on opinions sent to other judges and received from other judges during the survey period. Use this log to record all opinions sent or received during the time of the survey. Even record opinions returned to authoring judges with editorial comments. This information will help us in comparing the various methods being used to send and receive opinions within the circuit.

1. Opinion Case Number. Each opinion should be logged under the associated case number or lead case number if the case has been consolidated.

2. Judge's Name. In this column, enter the name of the judge you are working for.

3. Author. If your judge was the author of this opinion, write in a "Y" for yes, and if he was not the author write in a "N" for no.

4. Document Sent or Received. For the sake of simplicity, you will use this log to record information both for those documents you send and for those you receive. In this column note whether the document you are recording is one you are sending out (S), or one you have received (R).

5. Sent To or Received From. Write in the appropriate numbers to indicate (a) who this document is being sent to if it is one you are sending out, or (b) who this document was received from if it is one you have received from another judge.

6. How Sent or Received. In this column, write in the method used to send the document. The primary options are U.S. Mail (M), facsimile (FAX), and electronic mail using the word processor (WP).

7. Transmission Interruption. If you were sending or receiving using the word processor, or the facimile machine, put a check in this column if there was an abort in transmission.

8. Calls Required. For all documents sent or received using the word processing equipment, indicate here the number of calls you made to the computer before you were able to establish a connection.

9. Total Pages in the Document. In this column, write in the total number of pages in the document.

NAME: _____ DATE: _____

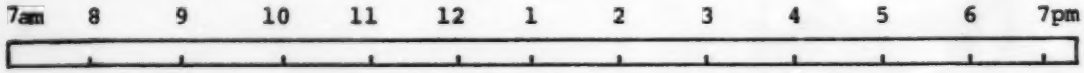
TYPING LOG SHEET

Document Name	Author's Initials	Machine Used to Type Doc (T, DEC, or Mag)	Rush or Normal (R or N)	Light or Heavy Revision (L or H)	Revision Number	Total Lines Typed (est)	Total Pages in Doc.

TYPING TIME LOG

Total Hours at Work _____

Typing Time: (Shade in times you spent typing)



NAME: _____ DATE: _____

COMMUNICATIONS LOG SHEET

Case Number of Opinion	Judge's Name	Opinion Author	Document Sent or Received (S or R)	Document Sent to/ Received From (see code at bottom of page)	How Sent or Received (Mail, Fax, DEC, or Hand-Carry)	Number of Trans Aborts if Fax or DEC	No. of Calls Req. to Connect if DEC Trans.	Total Pages in Doc

CODES TO BE USED TO ENTER THE NAMES OF JUDGES:

1 = Seitz
2 = Aldisert
3 = Adams
4 = Gibbons
5 = Rosenn
6 = Hunter
7 = Weis
8 = Garth
9 = Higginbotham
S1 = Van Dusen
C = Clerk's Office
CE = Circuit Executive
O = Other (Includes all other Senior and District Judges)

Appendix B

Excerpts from

Internal Operating Procedures (IOP)

Court of Appeals
for the Third Circuit

[Section] E. Panel Conference Procedure and Decisions

1. Tentative Views. After a case has been argued or submitted to a panel of the Court, a conference is held to exchange tentative views as to the decision.

2. Opinion Assignment. Following discussion and tentative votes, the presiding judge assigns those cases in which opinions of the Court are to be drafted to the judges of the panel for preparation of the opinion of the Court.

F. Opinion Reflects Conference Views

The opinion-writing judge prepares a draft opinion in accordance with the decision of the panel at conference or expressing any different views which he has reached after his subsequent study of the case. The opinion may be a detailed statement of reasons supporting the Court's decision, signed by the writer for the Court. In appropriate cases it may be an opinion to be signed "Per Curiam."

G. Per Curiam Opinions

A Per Curiam opinion is generally utilized:

1. For reversals of the trial court or denials of the requested relief from or enforcement of administrative agency action in those cases where the law is relatively clear and does not necessitate a signed opinion.

2. For affirmances of the trial court or granting of relief from or enforcement of administrative action under circumstances where a signed opinion is not necessary, but fuller explanation of the court's action is needed than the mere affirmance by a judgment order.

H. Plan for Publication of Opinions

1. Policy. This Court publishes all signed opinions except where the panel, or court en banc, by majority vote, decides not to publish. While there is no presumption against publication of signed opinions, there should be publication only where the case has precedental or institutional value. An opinion which has value only to the trial court or litigants should not be published.

4. Per Curiam Opinions. There is a presumption against publication of per curiam opinions. Unless the typescript copy affirmatively indicates that a per curiam opinion is for publication, the Clerk shall not cause it to be published.

I. Circulation of Opinions

1. Within Panel. After the draft opinion has been prepared the opinion-writing judge circulates it, with notice to the statistics clerk, to the other two members of the panel with a request for approval or suggestions they may desire to make with respect to the draft opinion. Answering this request is given a very high priority by the other two judges. Because it is the opinion of the Court, other members of the panel are free to make any suggestions relating to the modification of, addition to, or subtraction from the proposed text. Where a textual revision or addition is suggested, the suggesting judge submits his modification in specific language capable of being inserted in the opinion. When one of the other two judges approve, it becomes the proposed opinion of the Court.

2. Circulation of Dissenting or Concurring Opinions. A dissenting or concurring opinion is sent to the writer of the majority opinion who has the responsibility of circulation to active members of the Court and of ultimate filing with the Clerk.

3. Time Schedule for Panel Drafting and Circulating of Opinions.

a. 60-day period for draft opinion writing. The Administrative Office of the United States Courts, pursuant to a resolution of the Judicial Conference of the United States, requires notification by the Clerk of all cases which have not been terminated within a prescribed time. In order to effectuate this policy the opinion-writing judge is expected to circulate a draft of his opinion within sixty days after assignment.

b. 45-day period to file concurring or dissenting opinion. If the third judge desires to circulate a concurring or dissenting opinion, he is given 45 days to do so or state that he wishes to be recorded as dissenting or concurring in the result.

4. To Non-Panel Active Judges. Per curiam opinions of the panel which are not to be published and which unanimously affirm the trial court or enforce the action of the administrative agency are filed forthwith with the Clerk by the opinion-writing judge. All other draft opinions of the panel are circulated to all active judges of the Court. The circulation to non-panel members takes place after (1) the draft opinion has been approved by all three panel members or (2) the draft opinion has been approved only by two members of the panel and the third panel member has submitted a separate opinion to be circulated with the majority opinion or has stated that he wishes to be recorded as dissenting or concurring in the result, or has been noted as not joining in the opinion. If, eight days after the opinion is mailed for circulation, no vote for rehearing is received by the opinion-writing judge, the opinion may be filed.

J. Filing of Opinions

The original typescript and sufficient copies of the opinion are sent to the Clerk for filing.

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